The Journal of the American Medical Association

Published Under the Auspices of the Board of Trustees

VOL. 143, NO. 7 — CHICAGO, ILLINOIS — JUNE 17, 1950

COPYRIGHT, 1950, BY AMERICAN MEDICAL ASSOCIATION

THE SCOPE AND RELATIONSHIPS OF PSYCHIATRY IN MEDICINE

Chairman's Address

FRANCIS J. GERTY, M.D.
Chicago

Recently, psychiatry has been receiving much more notice and of a different kind than in time past. Less than fifty years ago its place in private practice and in medical education was that of the subordinate branch of the minor specialty of nervous and mental diseases. It had a shakily important position in the field of state and private institutional service. The chief public notice accorded it concerned the troubles and shortcomings of mental institutions and the conflicting testimony of alienists in murder trials. Yet, psyche is a pervasive element in human behavior and that element on which man's claim to superiority over other animals rests. Since psyche is credited with such importance, one might expect that psychiatry would have an important place in the field of medicine. In fact, one might think of its boundaries as being coextensive with those of medicine and expect to learn that in the history of medical progress its role from the beginning had been a major one. Actually, psyche has been considered something superimposed on man and therefore not directly the concern of medicine. Psychiatry was not accepted seriously as a medical specialty even in its institutional form of practice until the nineteenth century. Even now its major relation to the problems of medicine is not readily conceded in all medical schools. Nor do all practitioners of medicine assign it a place as one of the important medical specialties. However, it does enjoy more recognition today than ever before, and the change has come about in a relatively short time. This belated and partial recognition requires comment and explanation.

COMPARISON OF FORMER AND PRESENT CONDITIONS OF PSYCHIATRIC PRACTICE

In nothing is the change in attitude toward the practice of psychiatry more evident than in a comparison of the conditions now existing with what they were formerly. While medicine touched on the problems of mental illness lightly from time to time, until well into the present century psychiatric practice was largely institutional. The emphasis in treatment was principally on humanitarian custodial means; in scientific contributions, more exact clinical descriptions and classifications and study of pathology; in forensic matters, the opinions of alienists on the mental condition of hypothetic persons. Private practice was usually an adjunct to neurologic work, being concerned with consultations and a combination of physical treatments and psychotherapy. The recommended physical means of treatment included sedatives, tonics, massage, baths, rest, exercise and diet. Not a little psychotherapy was used, some of it by design and some unconsciously. Rational psychotherapy proceeded as far as explanation, reassurance and persuasion, and some practitioners consciously employed suggestion and hypnotism. Patients with major psychoses were sent to state hospitals or to private asylums or retreats. There were private sanatoriums and rest cures for patients with what was commonly called nervous exhaustion. Except in institutions, the exclusive practice of this specialty was almost unknown.

Today, the practice of psychiatry is quite different from what it used to be. There are still special mental institutions, and there are more patients than ever in them. The progress that has been made has affected the institutions somewhat, but not as much as one could wish. In some of them the conditions remain essentially the same as they were twenty-five or fifty years ago. Many physicians are engaged in the exclusive private practice of psychiatry. The American Psychiatric Association now has over 5,200 members. It had 176 members in 1890, when it was known as the Association of Medical Superintendents of American Institutions for the Insane. The field of the medical neurologist has been invaded by the neurosurgeon and the psychiatrist. There are more psychiatrists than neurologists in private practice. Subspecialization in psychiatry is common, especially in psychoanalysis but to a lesser extent in child psychiatry. Of the analysts there are several subgroups, though more or less orthodox freudian psychoanalysis is the predominant analytic therapy in America. A number of general hospitals have opened psychiatric units in the last fifteen years. The patients received in the psychiatric units are usually persons with acute psychoses sent to the hospital for treatment by the new physical shock methods. However, now that the psychiatrist is a regular member of the hospital staff, not an occasional consultant, he is kept busy participating in the treatment of other patients than those received in the psychiatric unit. The psychiatric aspect of all illness is given much more attention in these hospitals than formerly, and the mentally ill patients receive a quality of physical treatment not available to them formerly. Most office practice is concerned with psychotherapy, usually with appointments filled far in advance. The outpatient clinics are too few in number but are kept busy giving the same kind of treatment as that available in private offices. The military services, Veterans Administration, many state hospitals and many psychiatric clinics are offering exceptionally good opportunities at unprecedentedly high salaries for quali-

Professor and Head of the Department of Psychiatry, University of Illinois College of Medicine.
Read before the Section on Nervous and Mental Diseases at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

fied psychiatrists. Unfortunately, the lure of private practice, particularly in psychoanalysis, is such that even young psychiatrists who have just finished their training will not accept such positions. Without question, a great change has come over the practice of psychiatry in a few years.

REQUISITE UNDERGRADUATE TRAINING

The student of medicine should obtain a good general preparation for the practice of his chosen profession in his undergraduate course of study. Each branch of medicine should contribute its share to this preparation in proportion to its value. A few years ago some approved medical colleges did not offer special courses in psychiatry and most of the others taught little about the subject. Since this was so, one is justified in assuming that recognizing agencies and medical college faculties did not regard the teaching of psychiatry to undergraduate students as an essential part of the preparation for practice but viewed it, rather, as a special branch about which the student should be taught something if time, facilities and the requirements of more important divisions of instruction permitted. Definitely, this view is changing—changing in the face of many difficulties. Once a medical college might have been content to offer a course in psychiatry to senior students, probably of lectures and some clinical demonstrations. The curriculum hours reserved for this purpose were few indeed. In the past twenty years the number of instruction hours assigned to psychiatry has increased greatly in all medical schools where it was formerly in the condition which has been described as having been fairly typical. In most medical schools the course in psychiatry is taught not only in the clinical years but has extended back into the preclinical ones. The effect of Adolph Meyer's† influence on undergraduate medical education should not be underestimated. He termed his psychobiologic concept "commonsense psychiatry." It seems to be so in that it attempts to include all the factors that enter into the life experience in their chronologic sequence and their interrelationships. His school built up slowly between 1906 and 1920, then more rapidly until it reached its peak between 1930 and 1940. During this period the survey of the teaching of psychiatry in American medical colleges was carried on intensively and the American Board of Psychiatry and Neurology was organized. With Meyer's retirement and the coming of the second World War the ground which he had prepared proved much more fertile soil for the growth of psychoanalytic influence in undergraduate education than might have been expected. The tendency is toward much wider acceptance of the view that psychiatry is an essential part of undergraduate medical teaching, not merely a specialist field about which the student needs to learn only a little. As this view becomes accepted—and it becomes accepted through practical demonstration rather than discussion—the implementation of the instruction improves. There are many more full time and part time instructors in psychiatry than there used to be. One of the most fruitful results is the participation in work with other departments of instruction. This brings opportunity to teach students psychiatric technics and principles in the hospital and outpatient departments of services other than psychiatry. The change is not fully accomplished, but the evidences of progress are there.

† Dr. Meyer died March 17, 1950.

SPECIALIST EDUCATION—PROGRESS IN STANDARDIZATION

As long as psychiatry remained an institutional specialty or was practiced as a sideline of neurology, the training of psychiatrists was accomplished by a sort of apprenticeship graduation of experience through employment in a mental hospital or under the tutelage of a practicing neurologist. Until recently there was little attempt to standardize training except locally in a few hospitals and institutes. The quantity and quality of teaching and experience were uneven. Practically no attention was paid to choosing specialists on the basis of personality fitness for specialization. In forty years there has been much alteration of standards for the training of specialists in psychiatry. The change began with the pioneer work of Adolph Meyer, Albert M. Barrett and Elmer Southard. The great influence of psychoanalysis on this development cannot be denied, but the organization of the American Board of Psychiatry and Neurology in 1934 has had the chief practical effect in standardizing the education of specialists in psychiatry. In place of a few residencies and fellowships under a few eminent teachers and leaders a much more definitely organized and uniform pattern of training has appeared. Besides its other functions the Board is an agency "To consider and advise as to any course of study and technical training, and to diffuse any information calculated to promote and ensure the fitness of persons desirous of qualifying for a certificate of qualification to be issued thereby." Admission to its examination requires a total experience of five years after a general internship, three years of which shall be a period of study in institutions recognized by the Council of Medical Education and Hospitals of the American Medical Association as competent to provide a satisfactory training in psychiatry and not less than two years of additional practice in psychiatry. At present there are listed over 1,500 psychiatric residency positions in recognized institutions in the United States. Inspection of these institutions is not yet completed; hence, it is difficult to be sure how many of them can give satisfactory training. The Board suggests a program of subject content and of time distribution between the several subject subdivisions. There are a great many candidates for training—even applicants for admission to medical college often express special interest in psychiatry—but many of the recognized training programs do not attract a sufficient number of candidates to fill their quota and other programs have a surplus of applicants. Specifically, many candidates wish to get psychoanalytic training and admit readily that their goal is psychoanalytic office practice. The combined result of the Board suggestions—often referred to as "requirements"—as to subject matter distribution, and the interest on the part of candidates in psychoanalysis—a type of training which is not included in the Board "requirements"—results in a pressuring of training institutes and hospitals to regulate their training programs to meet the demands of trainees. Applicants generally wish to know specifically and almost always in terms of block time and special courses how the residency meets the Board suggestions. This is somewhat annoying to supervisors of some programs, especially in hospitals where a good experience and training might be had in the total program on a time-equivalent basis. Those residencies are at a premium which offer opportunity for arranging for a personal psychoanalysis or include psychoanalysis within their scope. Psychoanalytic institutes have not been

inspected and approved by the American Medical Association as special training institutes, so that this training is still officially in the extracurricular category. The Associated Psychiatric Faculties of Chicago—an organization of persons drawn from two of the universities, three of the hospitals approved for resident training and the Chicago Institute for Psychoanalysis—is attempting to provide an indirect recognition for psychoanalytic training in a special situation. Trainees accepted by this organization may be rotated through the three hospitals, if acceptable to the hospitals, in addition to their analytic training. In return, residents in the hospitals are given priority for analytic training at the Chicago Institute for Psychoanalysis. It is obvious that there is not agreement among psychiatrists that psychoanalytic training should be included at the resident level. Permission to allow time for a personal psychoanalysis to a resident always involves some problem of adjustment of the major program of training. If the thinking of the resident is that psychoanalysis *is* the major program, the problem becomes greater. Residents undergoing analysis sometimes do become upset emotionally during the process, and this can produce further difficulty. However, opportunity for psychoanalytic training is found only in a few places. The psychoanalytic institutes have waiting lists, seem to be aware of the problems and are screening their candidates with considerable care. At the same time, they are trying to increase their means of financial support, amplify their staffs and other facilities and obtain more recognition in medical circles. The lack of adequate personnel and other means required to provide experience in pediatric psychiatry is another problem calling for solution. General psychiatric opinion is much more uniform on the desirability of including this than it is on the subject of psychoanalysis. However, pediatric psychiatrists do not all agree that the general program can include adequate training. The suggestion has been made that a subspecialty certificate be granted after an additional course of training has been taken and an examination has been passed. The general trend in Board examinations and in the training programs has been to decrease the amount of basic and clinical neurology required for candidates in psychiatry. Many psychiatrists and neurologists deplore this tendency; some psychiatrists, especially those with strong psychoanalytic leanings, believe that it is more important for residents to learn other things. In some respects psychiatry now has interests more closely identified with general medicine and pediatrics than with neurology, as is evidenced by the attention now given to psychosomatic medicine. This is reflected in some of the recommendations made for modification of the standards set by the Board of Psychiatry and Neurology. One more practical matter concerning the problem of specialist training should be mentioned. Since specialization in psychiatry now requires five years' experience after the internship, residents want better pay. Many of them are married and have families. If they are also paying $1,200 to $1,500 a year for psychoanalytic training, it is apparent that they are under financial pressure.

GENERAL ATTITUDE OF PUBLIC TOWARD PSYCHIATRY

The public notice given to psychiatry recently is deplored by some in the field, welcomed by others. Certainly it is greater in amount and, on the whole, more favorable than in the past. There is still much unfavorable criticism of conditions in mental hospitals, but a new note has appeared in the kind of attention that psychiatry in general receives. The physical methods of treatment are heralded, but most of the notice seems to be given to psychologic aspects of treatment. Lecture platform, lay press, stage, movies, pulpit and courts of law are all mediums for bringing psychiatry to attention. Patients are much less in awe of the specialized vocabulary than they used to be. In fact, they often use the terms glibly. Many of them want to know whether the physician to whom they have been referred is a neurologist, psychiatrist or psychoanalyst. Psychosomatic medicine, the unconscious, symbolism, dream analysis and narcoanalysis are becoming commonplace words. Some ministers of the gospel would seem to make religion mostly psychiatry. Others see psychiatry as a threat to religion. The relationship of psychiatry to social problems and world affairs is assumed by some psychiatrically oriented persons to be major in importance at this time, and preparations are being made for application of its principles in a practical way and on a wide scale to these problems. That psychiatrists themselves should become involved in contributing to publicity is to be expected. They are as likely to be its victims as to benefit by it. The hope that they can take advantage of it to promote progress toward good ends beckons but can lead them too far. The direction and force of this current is not easily controlled, and those who enter it are often swept along in unforeseen ways into unhappy predicaments. It is now more necessary than ever that psychiatrists undertake the task of evaluating the contributions of their profession.

WIDENING FIELD OF PSYCHIATRIC PRACTICE

There are more than 650,000 patients in mental hospitals in the United States. Most of them are persons with more serious types of disorder. Probably many others with major psychoses are to be found outside of hospitals. It is often said that one third to one half of the patients who go to the doctor's office have no physical cause for their symptoms. This is substantiated by hospital and clinic reports concerning large series of patients with gastrointestinal and cardiovascular symptoms. The number of persons who may be classified definitely as having psychoneuroses and personality disorders and maladjustments is certainly large. The most important causes of so-called psychosomatic disorders are probably psychogenic. An increasing amount of attention is being given to cases of this kind. The psychologic encumbrances of ordinary illness are always of some importance and not infrequently influence the progress of the patient. Conversely, all patients with psychiatric difficulties are also subject to the usual physical illnesses. One beholds an ample field for psychiatry. To a greater degree than other specialties psychiatry is interdependent with all the rest of medicine and shows every evidence of bursting through the limits of specialization to make its methods available to all physicians.

Psychiatry may be examined conveniently as to its initial development within the bounds of specialization with respect to its contributions to the treatment of the major psychoses and of the psychoneuroses. This division seems to stress the organic as opposed to the functional, but it is useful for our purpose of revealing the evolution of present day psychiatry. I have no intention of reviewing the full historical background concerning discoveries and concepts as to the organic causation of mental disease and relation of these to the use of physical means of treatment of the major psychoses by

date, name and record of accomplishment. All the names would not be those of psychiatrists. One need cite only the contributions of Wagner-Jauregg to the treatment of dementia paralytica (1917) and those of Sakel (insulin shock treatment of schizophrenia, 1933) and of Meduna (pentylenetetrazole [metrazol®] convulsive therapy, 1934) to indicate that physical treatments of the major psychoses have had much to do with some of the changes that have come about in psychiatry. Many patients have been cured or helped; favorable attention has come to medicine and psychiatry; research has been stimulated; the doors of general hospitals have been opened to mentally ill patients, and mental hospitals have become somewhat less forbidding places. Undoubtedly, these and other methods of physical treatment have helped promote the private practice of psychiatry. It is doubtful whether they have changed the state of private office practice greatly, have modified much the teaching of psychiatry to undergraduate medical students or affected the residency training programs remarkably. They have had some effect on all of these, it is true, but private office practice, education of medical students and specialists in psychiatry, psychosomatic medicine and pediatric psychiatry have been much more affected by developments connected with the treatment of the psychoneuroses. Explorations to discover the place, value and technic of elicitation and use of psychologic data (in the broadest meaning of the term) in medical examination, diagnosis and treatment had been long overdue.

The treatments formerly depended on principally in the treatment of psychoneuroses were physical in nature. One need not be astonished that Freud's determined invasion of the unconscious by the free association method and all the things he drew from that capacious "grab bag" aroused suspicion and provoked antagonism which persists to this day. His methods were unprecedented and his manner not particularly conciliatory. I shall not review the history of the psychoanalytic movement or attempt to elucidate the principles and practice of psychoanalysis. Neither do I need to trace the origins of its early schisms and later subdivision into psychoanalytic groups and schools of thought. This must be said: physicians, and, of course, first among them neurologists and psychiatrists, whether or not they have turned into one or another kind of psychoanalyst, have been forced to think about, read about, experiment with and discover something about the importance of psychologic data—again giving the widest possible meaning to the term—in medicine. It is this chiefly which has affected the private office practice of psychiatry and made it largely psychotherapy. It is this which recently has changed the kind of undergraduate teaching of psychiatry and has so greatly modified the standards of training of specialists in the field of psychiatry. It is this, too, which has chief responsibility for psychosomatic medicine and much to do with the development of pediatric psychiatry.

The force producing most of these changes was psychoanalysis. Of course, a sustained force of this kind is not easily contained. As it burst through the bounds of psychiatric specialization it is still bursting through the bounds of medicine even as it did in its early days in the case of lay analysis. Proposals have been made that a different degree in medicine, possibly Doctor of Psychological Medicine, be granted after a different type of undergraduate medical course which would omit some of the traditional courses in favor of other courses more suited for the intended purpose. It has been suggested that this might be a means of countering the practice of psychotherapy by unqualified psychologists. Psychoanalysts, perhaps more than others in the field of medicine, tend to move quickly in the direction of offering service in the solution of a great variety of social, governmental and international problems. As sometimes with Freud, a general philosophy seems to overshadow the more definitely medical concepts and technics. There is evidence that psychoanalysts are settling down into the more usual patterns of medical functioning. They are finding their place in medicine and having their effect on it. As they become more generally accepted the need for a protective autonomy will grow less.

SUMMARY

One looks at the future usually in terms of present needs and of hopes as to how they will be met. It is certain that mental institutions need much help from all the branches of medicine,—including, ironically, more from psychiatry than present indications are that psychiatrists will be likely to afford them soon. Some return of benefit to these hospitals should be expected. Research is needed. Although the standards for the conduct of physical types of research were set long ago, implementation, particularly with the best minds in neurophysiology and biochemistry working in association with good clinicians, is imperative. Research in the evaluation of psychotherapy is definitely needed. It will undoubtedly involve careful observation and recording of all that takes place in psychotherapeutic interviews and the application of refined psychologic testing methods. It would seem that training facilities for clinical psychology should be improved and that psychologists should work in the medical setting. The physical scientist likes to work at the level of the physical substratum of the living person, and it is right that he should, but there is an overlay of experience which by its weight and active concatenations affects the substratum and the whole performance of the individual. It is within the purview of science to investigate this overlay also, though the task is difficult and the means in some stages of investigation may have to be quite different from those used for physical investigations. The interdependence of psychiatry and the rest of medicine becomes steadily more apparent. One can never tell from what direction the help will come to psychiatry for the solution of some of its problems. I would not expect psychoanalysis to survive as an autonomous system in medicine, but acknowledgment must be made of the tremendous contribution of Sigmund Freud and his followers to psychiatry and to medicine. It is well to honor a master ever and to follow him far enough but not to be dependent on him too much or too long. What of neurology? All important human activity, including particularly psychic activity, is dependent on controls and regulations operating in the organic nervous system. In the past neurology has been necessarily much occupied with the study of coarse pathology and its effects. A new neurology rooted in physiology is developing. It will become one of the solid important bases of all medicine. On the psychologic level psychiatry has already moved far outside its former limits into the field of total functioning. The common origin and parallel interconnected planes of development of neurology and psychiatry seem to augur that in some future day the designation neuropsychiatrist will have a weightier and more certain meaning than it does now.

8 South Michigan Avenue (10).

TREATMENT OF PSYCHOSOMATIC DISORDERS BY THE GENERAL PHYSICIAN

ROBERT H. CREDE, M.D.
MILTON ROSENBAUM, M.D.
and
HENRY D. LEDERER, M.D.
Cincinnati

The current data pertaining to psychosomatic disorders have been assembled by physicians with varying degrees of skill and information in psychiatry and medicine. The psychoanalytic studies of small groups of patients have provided the most meaningful facts regarding the psychodynamics and psychophysiologic integrations in these conditions. But these same psychoanalytic technics can furnish therapy only for relatively few patients. Psychotherapy for the majority of psychosomatic patients rests with the general physician, whose interest in and acquaintance with psychodynamic concepts is usually limited.

Therefore, the practical problem arises as to the best methods of transmitting to the general physician the pertinent psychodynamic data and of guiding him to develop workable technics of applying such data in his treatment of psychosomatic disorders. In finding answers to this problem, treatment methods must be developed which can be administered by the physician who is not a psychiatrist. This paper will discuss in some detail pedagogic maneuvers which are even now in further evolution and which have yielded certain satisfying results both in therapeutic gains and in increased skill of the students so taught.

It is generally recognized that to effect a favorable response to attempts to indoctrinate persons with new technics, attention must be given to creating a proper "atmosphere of acceptance." In other words, it has been our plan to provide intensive instruction to certain general physicians and to do so against a background of extensive work with various groups in contact with them. As will be shown later in this paper, the most intensive instruction has been given to the medical residents, but, concurrently, there has been offered extensive teaching of psychosomatic concepts to other groups.

During the four years of medical school, lectures and case demonstrations have been provided to introduce medical students to the psychosomatic point of view. Senior students are required to conduct several intensive psychosomatic studies on patients assigned to their care during the period of ward clerkship on the medical service. Tutorial instruction of small groups of senior students has been offered and enthusiastically received. A weekly "psychosomatic" case conference is conducted and is attended by medical students, house staff, senior staff members of the departments of psychiatry and medicine and other interested persons. An evening seminar in psychiatry and psychosomatic medicine is given twice monthly to a large group of practicing physicians, many of whom are members of the visiting staff.

By this considerable amount of indoctrination, the medical students and visiting staff physicians, two groups which are in constant contact with the medical residents, have been introduced to psychosomatic medicine. Their acceptance of such concepts reenforces the interest and effort which the medical resident will invest in his treatment of psychosomatic disorders on the wards and in the clinic.

The remainder of this discussion will be focused on: (1) the instruction of physicians who have not had psychiatric training in the technics of psychotherapy which they can administer in "psychosomatic disorders"; (2) the goals of such a program, and (3) the results of the program. First and second year medical residents constitute the group on which this effort has been concentrated. The specific setting for this teaching of psychotherapy has been a special psychosomatic clinic. This clinic, which is a division of the general medical clinic, meets two afternoons a week from 1 to 4 p.m. The medical residents see their patients from 1 to 3 p.m., and the following hour is spent in a control session in which the residents present case material to a psychiatric consultant. Other members of the clinic are present and participate in the group discussion. Patients are seen in this clinic by appointment only and, once they are accepted, will see the same physician, since each resident attends the clinic throughout the year. The length of each clinic visit varies from one-half to one hour, depending on the needs of the patient and the physician's schedule. In this way the medical resident will usually see from 2 to 4 patients at each meeting of the clinic. Patients are selected for this clinic from the general medical clinic and medical wards.

The individual doctor-patient relationship stressed in this clinic is vastly different from that seen in the general medical clinic. In the general medical clinic patients are seen at sporadic intervals, the appointments are subject to delay and the patient may see a different doctor at each visit. These problems are inherent in any large, overcrowded medical clinic and do not represent any lack of desire on the part of those directing the clinic to provide the best possible medical care.

The technics of therapy which will be discussed shortly are based on the intrinsic value of the clinic atmosphere and the interpersonal physician-patient relationship developed therein. This clinic atmosphere strengthens the physician-patient relationship because it helps the patient to maintain his dignity, self respect and self esteem. This is made possible by the simple fact of the patient's knowing that he has one physician, that he is given definite appointments, that he is not kept waiting for long periods of time and that once he enters a physician's office he can expect to be seen in an unhurried manner for a reasonable length of time. To most of our patients these facts represent a unique experience. In this clinic setting the physicians who have not had psychiatric training, such as the medical residents, have the personal experience of dealing with the emotional aspects of medical disorders. Such personal experience is probably the most effective method of learning and understanding the psychotherapeutic process; however, at the same time it may provoke considerable anxiety in the physician. This anxiety in the physician must be recognized and relieved so that it does not impede learning and therapeutic goals.

Much attention must be given to the reassurance, support and encouragement of the participating physicians. The regularly scheduled control sessions supervised by psychiatric consultants have proved highly valuable in reassuring the medical residents and in allaying their anxieties as therapeutists.

The goals of therapy in this clinic have been: (1) symptomatic relief; (2) improved total functional capacity of the patient, and (3) prevention of recur-

From the Departments of Medicine and Psychiatry, University of Cincinnati College of Medicine and the Cincinnati General Hospital.
Drs. Eugene B. Ferris, Morton F. Reiser, Norman C. Chivers, Frederic Kapp, I. Arthur Mirsky and W. Donald Ross aided in the preparation of this report. A grant from the Commonwealth Fund made this study possible.

rences, exacerbations or complications of the patient's illness. One must continually refrain from setting too ambitious therapeutic goals which might frustrate the therapeutist. It is recognized in the clinic that psychosomatic disorders represent extremely difficult therapeutic problems, and it is meaningful reassurance for the therapeutist to realize that, in many cases, his efforts are as valuable as those of an experienced psychiatrist.

Many psychotherapeutic technics are used in varying degrees, but "depth" technics such as analysis, hypnosis and hypnoanalysis are avoided. To begin with, the physician must develop a real interest in the patient. However, if such a real interest is not forthcoming, the control conferences serve to reassure the physician while at the same time helping him to become aware of his own counter-transference problems as the next step in therapy.

After a thorough physical and laboratory investigation by the physician, the patient is given a clear evaluation of his medical disorder combined with reassurance. This reassurance is not only verbal; it is strongly reenforced by the attitude of the physician in his subsequent dealings with the patient and is mainly dependent on the lack of anxiety that the physician reveals. Thus, it becomes perfectly obvious that in order for the physician to have a reassuring attitude, he must feel secure and confident in his medical ability and judgment and must be willing to face certain necessary risks, such as being criticized by his own conscience and his colleagues for handling serious medical problems in this fashion. In other words, basic reassurance in these instances stems from the patient's conscious and unconscious awareness of the strength, integrity and sincerity of purpose of the physician.

In such a setting, the patient is encouraged to verbalize emotional feelings centered about various current life situations. Frequently, this may be the patient's first opportunitty to discuss such problems with a physician, and, in some instances, the physician's interest is interpreted by the patient as meaning that these problems are an intrinsic part of his illness. When necessary, we utilize social service workers and other community agencies to help alleviate the patient's realistic problems, such as finances, housing, homemaking and legal aid. In certain cases, the clinic social service worker may be seeing another member of the patient's family and cooperating with the physician in the over-all management of the patient.

In this clinic, medication may be given frequently as part of the general therapeutic situation and may be of a specific or nonspecific nature. This technic is of special value in instances in which medication represents meeting the patient's dependent needs and magical wishes, especially in patients whose cultural backgrounds are such that being given medicine represents a tangible expression of the physician's interest in them and their complaints. Also, it is probable that many of the residents consciously and unconsciously reassure themselves by giving medications to their patients.

It is important that physicians understand the value of hospitalizing patients with psychosomatic disorders during periods of emotional stress, even though the actual physical condition would not seem to indicate such action. Many of these patients are extremely deprived emotionally and have strong dependent needs. The hospitalization represents actual giving on the part of the physician, in addition to removing the patient from acute external stress. During the hospitalization a strong dependent transference can be established, which serves to build up a trusting relationship with the therapeutist. This relationship then becomes the major factor in the subsequent ambulatory therapeutic situation. Such a maneuver is a type of emotional replacement therapy which is particularly valuable in the treatment of psychosomatic disorders, since severe emotional deprivation with pregenital traumas are so frequently the core of the disorder. It becomes apparent, then, that in many instances the dependent transference is permitted to exist, since it may continue to be the major factor in therapy.

Although analytic technics are not used, a certain amount of insight therapy is encouraged. An attempt is made to give the patients insight into certain life experiences which bear a temporal relationship to their symptoms, and, in certain patients, it is possible to interpret noxious current stimuli in terms of similar past experiences which were highly charged emotionally. At times it is necessary to discuss conscious and unconscious attitudes regarding sibling rivalry, hostilities engendered by frustration of dependent needs, competitive envy and guilt feelings. Direct interpretations of unconscious conflicts centering around oedipal problems or of transference material dealing with oedipal conflicts are avoided. However, the therapeutist is made aware of these problems, and the control session may be devoted to a discussion of such material. In several instances in which oedipal material was dominant, the control session was utilized to point out the dynamics, to reassure the therapeutist regarding counter-transference attitudes and to help him assume attitudes toward the patient which would provide a corrective emotional experience. When the therapeutist is made aware of his own counter-transference attitudes, especially in regard to oedipal problems, he is able to continue the therapeutic relationship without mobilization of undue anxiety either in himself or in his patient.

It is of great value when the therapeutist can recognize repetitive responses on the part of the patient to certain life situations which are specifically emotionally charged, since such experiences may act as precipitating factors in the illness. Interpretations can be made with the hope of making the patient aware of the sensitive areas in his emotional life and the temporal relationship these conflicts play in his illness. In such manner, the therapeutist may prevent or shorten recurrences in the illness.

The following case is an example of a failure to prevent recurrence and complication in a patient with a duodenal ulcer.

Case 1.—L. M., a 37 year old married white man, was seen in the Psychosomatic Clinic because of a chronic recurrent duodenal ulcer of many years' duration. In the past, numerous exacerbations of the ulcer symptoms had responded temporarily to medical treatment. When he was first seen in the Clinic, the current exacerbation of symptoms was of several months' duration.

The patient was seen for one hour each week for six weeks. During this period he was given the usual medical treatment, antacid agents, antispasmodic drugs and a special diet. The interviews were taken up with a discussion of the patient's difficulties on his job, problems with his wife and financial worry. The therapeutist attempted to give the patient a good deal of emotional support and would offer suggestions which were designed to relieve some of the tension connected with the patient's employment and marital difficulties. The patient developed a slight degree of insight into the fact that certain tensions associated with his job and marriage seemed to cause exacerbations of his symptoms. Symptomatic improvement was noted within three weeks, and at the end of a six week period

the patient was asymptomatic. Gastrointestinal roentgenograms revealed that the ulcer had healed. As the patient became aware of the tension surrounding his job, he made the decision to quit and obtain other employment. This was done, and the patient stopped coming to the clinic because he was unable to get time off while working at his new job.

The patient was not seen again until he appeared in the emergency ward with a perforation of the duodenal ulcer. An interval history revealed that the day before the perforation he had been discharged from his job as a truck driver after a slight accident which he felt was not his fault. The next day his wife had left him after an argument, and a few hours later while on his way with a friend to a house of prostitution, he was suddenly seized with the severe pain of the perforation.

It is our feeling that had this man been able to continue his relationship with his physician, he might have been given enough support and gratification of his dependent needs during the period of acute emotional distress related to his wife's leaving that the perforation might not have taken place.

Once the therapeutist becomes aware of the patient's sensitive areas, he can actively help the patient to verbalize feelings about such experiences which might otherwise have remained hidden. This is illustrated by the following case.

CASE 2.—D. Z., a 23 year old white housewife, entered the hospital with severe headaches (typical of migraine) and attacks of pain in the right lower quadrant of three years' duration. Physical examination revealed persistent hypertension (blood pressure 170 systolic and 130 diastolic) and spasm of retinal arterioles, with scattered tiny scars throughout both retinas. The heart size was at the upper limits of normal, and studies of renal function revealed moderate impairment. Her personality structure was that of an immature, hysterical person with severe frustrated dependent longings.

There was intense sibling rivalry and definite underlying hostility to a rejecting mother. Problems related to sexuality and pregnancy were colored with intense unresolved hostility and guilt, which she had had as a child toward her pregnant mother and younger siblings. In adult life she was unable to adjust to the role of housewife or mother. She lived with her parents, and her own babies were cared for by her mother.

The current illness had started when her younger brother returned from the army and she had been forced to move into her own apartment to make room for him at her parents' home. From this situation, which was a repetition of the original traumatic experience, she developed intense underlying feelings of hostility toward her mother and her siblings who were still living at home. These unexpressed feelings appeared to be associated with the severe attacks of headache and abdominal pain for which she was hospitalized.

After formulation of the psychodynamics in the psychosomatic conference, a therapeutic plan was proposed which was directed at meeting her frustrated dependent needs. This included occasional contacts with the psychiatric consultant, offers of material giving when indicated and continued contacts with the medical resident. However, her presenting symptoms in combination with hypertension and severe spasm of the retinal arterioles aroused considerable anxiety in the medical resident who was following the case. The physician's anxiety was manifested by repetitive physical and laboratory examinations, with frequent consultations. This affected the patient in two ways: first, it gave the symptoms attention-getting value, and, second, it augmented the patient's anxiety, with a resulting increase of symptoms.

The psychiatric consultant continually reassured the medical resident that the patient was being handled properly, and, after a few months, the resident became more secure in dealing with her, because he recognized that the symptoms were not evidence of malignant hypertension but that they recurred in direct relation to emotional and environmental problems. As a result of this knowledge, each time the patient suffered an exacerbation of symptoms the physician immediately inquired into her current life situation, with special emphasis on immediate difficulties with her husband, children, siblings or mother which created frustration of her dependent needs with resulting hostility. The patient was allowed to talk freely about such problems, and temporal relationships to the development of symptoms were discussed. This discussion, plus a rapid physical check-up, served to relieve both the patient's and the physician's anxiety. With such therapy there was a remarkable diminution in both the frequency and severity of the "attacks." At the time of writing, although the blood pressure was unchanged, the patient was not only symptom free but had matured considerably and was functioning adequately as a mother and wife. When there is trouble she and her doctor have little difficulty in quickly discovering the precipitating factors.

It is important for the physician who has not had psychiatric training to realize that psychotherapy is positive therapy and that in many cases it is the only type of therapy that can be helpful. The realization that he may be successful in treating many patients who have had little help from previous medical therapy will enable the therapeutist to maintain his interest in patients whose condition he once might have regarded as hopeless.

One of the important results of this teaching experience has been the recognition by the medical resident of the ease with which pertinent psychologic material can be obtained while the general medical history is taken. The residents find that most patients are willing to talk about many vital personal matters if the physician not only listens but, by his accepting attitude, conveys the impression that such material is important and meaningful in the general medical illness from which they suffer. Inasmuch as the medical resident is responsible for the total care of his patient, it is necessary that he do the usual careful physical examination and make arrangements for the laboratory examinations that are indicated. As the therapeutist develops better understanding of the patient's emotional problems, he will refrain from making unnecessary examinations, either physical or laboratory. However, when these examinations are necessary, he will be able to carry them out without anxiety on his part and deal with any misinterpretation on the part of the patient. From our experience we have found that subsequent physical examinations during the psychotherapeutic process have not provoked undue anxiety or untoward reactions.

As a result of their experiences in the clinic, the medical residents have changed their attitude toward many of the ward patients. As an example, there have been fewer "sign-outs" of patients, which undoubtedly reflects the more tolerant and understanding attitude of the medical residents to various types of provocative behavior on the part of their patients. In many instances, the medical resident, realizing that the request for a "sign-out" represents a behavioral problem, will either attempt to handle this without becoming hostile himself or will suggest that such a patient undergo psychiatric evaluation. This is well illustrated by the following case:

CASE 3.—W. E., a 31 year old Negro man, entered the hospital with dyspnea on exertion of two to two and one-half months' duration. Subsequently, edema, orthopnea and chest pain had developed.

The patient's hypertension was first discovered in the Air Force. Despite a poor school and work record he had become a sergeant after having been in service for two months and then had promptly applied for officers' training. Although he passed the physical and other examinations, his application was rejected. About every two months he reapplied, only to be rejected, which increased his bitterness and resentment. After his last examination, some twenty-two months after he entered the service, he was hospitalized for hypertension and

remained in the hospital until he was discharged from the service six months later. After his discharge he applied for clerical jobs in the Veterans Administration without success.

On entry he was irritable and demanding of attention. His total behavior was extremely provocative in that he was flip, sarcastic, overtly hostile and scornful. When faced with minor frustrations he was seen to beat his head against the head of his bed. It is our feeling that in many instances such behavior would have provoked rejection and punitive countermeasures by the ward personnel. However, the medical resident, who was participating in the Psychosomatic Training Program, recognized that such behavior was the result of emotional difficulties and took steps to handle the problem. The ward personnel were called together and were told that this patient was emotionally ill and should be given special attention, especially in regard to fulfilling his requests as soon as possible. Psychiatric consultation was requested, and therapy was begun by one of the psychiatric residents.

Within thirty-six hours after these special measures had been instituted, the patient's behavior was much improved. He was less demanding, his provocative behavior was decidedly diminished, and, in general, he became better adjusted to the ward. It is of interest that during this period the patient's blood pressure dropped considerably and remained only slightly elevated for the remainder of his hospitalization. There was no further difficulty in the hospital management of this patient, and he remained on the ward until his discharge was medically indicated.

The recognition that emotional factors were responsible for this man's provocative behavior and the successful management based on this recognition demonstrate the practical value of psychosomatic training as it applies to the management of patients on a medical ward for the acutely ill.

At the present time we find it impossible to offer a statistical evaluation of therapeutic results. Most of the patients in this group have not been under observation for a sufficient period to determine whether or not the improvement is permanent or whether it is consistent with the usual course of the specific disease under classic medical management. Nevertheless, a few general impressions have been obtained from observation of this group of 170 patients. About 75 per cent of the patients had some medical illness associated with structural changes or persistent disturbances in normal physiologic function, such as hypertension, various types of organic heart disease, asthma, peptic ulcer, diabetes, neurodermatitis, migraine, epilepsy, hyperthyroidism and obesity. The remaining 25 per cent of the patients had primarily neurotic disorders, without evidence of structural disease or persistent pathophysiologic disturbances. However, in the group with medical disorders a large percentage had concomitant personality disturbances and/or neurotic symptoms, which in many instances accounted for the major degree of disability.

In the majority of patients there was symptomatic improvement, in many instances not related to that in the underlying structural disease. This is classically seen in patients with hypertension: symptoms frequently disappear although the blood pressure and associated structural pathologic conditions remain unchanged.

In about half the group there was improvement in total functional capacity while the patient was being given treatment in the Clinic. Many patients, when first seen, were functioning at a level far below that which their physical condition would permit. Improvement in functional capacity was determined by objective evaluation of the patient's ability to perform adequately at work, and in his home and social environment within the limits set by his physical disability. It was observed that symptomatic improvement was not necessarily accompanied by improvement in functional capacity.

Although some patients exhibited improvement in behavior patterns, no thoroughgoing modifications of character disturbances have been achieved.

Probably the most important result of the program is that the medical residents for the first time begin to develop feelings of security and stability in dealing with patients who have emotional disorders. The alleviation of the therapeutist's anxiety, which in the final analysis makes him a better doctor, is mainly accomplished by the control sessions, which are essentially therapeutic. For this reason we intend to drop the group control sessions and, instead, spend one hour a week in an individual supervisory session with each resident. Our experience thus far indicates that reassuring supervision is the most important part of the learning experience.

It would appear reasonable to anticipate that the medical residents and fellows who have had this introductory experience will have increased their functional capacities as physicians.

EFFECTS OF PITUITARY ADRENOCORTICOTROPIC HORMONE (ACTH) THERAPY

Electroencephalographic and Neuropsychiatric Changes in Fifteen Patients

PAUL F. A. HOEFER, M.D.
and
GILBERT H. GLASER, M.D.
New York

The adrenocorticotropic hormone of the pituitary (ACTH) is now being used in the treatment of many disorders [1] such as rheumatoid arthritis, lupus erythematosus, periarteritis nodosa, dermatomyositis, rheumatic fever, allergic states and other conditions involving mesenchymal tissue. The effect of this substance on the course of infections, neoplastic diseases, metabolic disorders, myopathies and mental illness is also being evaluated.

The present investigation was undertaken in order to study the nature of electroencephalographic abnormalities and neuropsychiatric disturbances which had been noted incidentally in patients treated initially with this drug. Altogether, 15 patients treated with pituitary adrenocorticotropic hormone were studied at the Columbia-Presbyterian Medical Center. Thirteen of these patients on the medical service [2] had the following diagnoses: rheumatoid arthritis, 8 cases; dermatomyositis, 2 cases; toxic diffuse goiter, 2 cases, and regional ileitis, 1 case. In addition, 2 patients with schizophrenia were observed at the New York State Psychiatric Institute. The accompanying table indicates the patient distribution by diagnosis, age, sex, dosage and duration of drug administration; it also relates electroencephalographic and neuropsychiatric observations to data on therapy.

Supported in part by the Masonic Foundation for Medical Research and Human Welfare.

From the Departments of Neurology and Medicine of the College of Physicians and Surgeons, Columbia University, the Neurological Institute and the Edward Daniels Faulkner Arthritis Clinic of the Presbyterian Hospital and the Department of Research Psychiatry, New York State Psychiatric Institute.

1. Proceedings of the Conference on ACTH sponsored by Armour and Company, Chicago, Oct. 21-22, 1949.

2. These patients were referred by Drs. Charles Ragan, Sidney Werner and George Perera.

METHOD OF STUDY

The electroencephalographic records were taken with Grass equipment (six and eight channels). Standard monopolar and bipolar records were obtained, and in each observation a five minute period of hyperventilation was included. One or two control records were obtained prior to treatment. During the period of drug administration records were taken every four to seven days in most instances. One or two final records were obtained about a week after termination of therapy.

The psychiatric studies consisted, whenever possible, of an evaluation of the premorbid personality and of frequent interviews by one of us during the course of treatment. In some of the earlier cases striking changes in personality and behavior were evaluated on the basis of reports by medical and nursing personnel. Neurologic examinations were also performed before and during therapy whenever indicated. All patients received the drug [3] by intramuscular injection every six hours. Complete medical and laboratory studies including electrolyte balances were carried out and will be the subject of separate reports by members of the medical staff.

Clinical, Electroencephalographic and Neuropsychiatric Data on 15 Patients Receiving Pituitary Adrenocorticotropic Hormone

Case	Age, Sex	Clinical Diagnosis	Dosage of Drug: Mg./Day	Dosage of Drug: Total (Mg.)	Duration of Drug Administration	Pretreatment Electroencephalogram	Electroencephalogram During Drug Administration	Premorbid Personality Characteristics	Mental Changes During Drug Administration
1	40 M	Rheumatoid arthritis	60-15	1,125	27 days	1. Normal, 9-11/sec. 2. Slightly slow, 5-7/sec.	Disorganized, irregular, low voltage 3-5/sec., especially during hyperventilation	Some emotional instability	Mild euphoria, increased tension, insomnia
2	34 F	Rheumatoid arthritis	100-40	300	6 days	Normal, 10-12/sec.	Irregular, discontinuous alpha, rare 7/sec.	Schizoid features	Moderate euphoria, verbal hyperactivity
3	19 F	Rheumatoid arthritis	40	280	7 days	Normal, 9-11/sec.	Irregular, 5-7/sec., often in bursts	No significantly abnormal features	Mild euphoria
4	62 F	Rheumatoid arthritis	60-25	4,200	5 mo.	Normal, 10-12/sec.	Irregular, 5-7/sec., some 15/sec.	No significantly abnormal features	Mild euphoria, mild tension, insomnia
5	45 M	Rheumatoid arthritis	40	240	6 days	Slightly slow, 6/sec.	Irregular, 4-6/sec., increasing with hyperventilation	No significantly abnormal features	Mild euphoria
6	42 F	Rheumatoid arthritis	100-40	580	13 days	Normal, 10-12/sec.	Irregular alpha slowing; disorganized 5-7/sec., 4-5/sec., and 15/sec.	Affective lability; suicide attempt	Manic psychotic reaction
7	49 M	Rheumatoid arthritis	75-40	315	7 days	Irregular, 10-12/sec.; some 5-7/sec.	Increased incidence of 5-7/sec.	No significantly abnormal features	Mild euphoria
8	43 M	Rheumatoid arthritis	100-40	340	7 days	Irregular, low voltage 5/sec.	No significant change	No significantly abnormal features	Very mild euphoria
9	35 F	Dermatomyositis	100	1,800	18 days	Normal, 10-11/sec.; occasional rapid and spike 15/sec.	Alpha absent; low voltage 4-5/sec., especially parieto-occipitally and during hyperventilation	Emotional instability	Stupor state
10	29 F	Dermatomyositis	100	900	9 days	Normal, 10-11/sec.	Alpha absent; low voltage 5-7/sec. and 4-5/sec., especially frontally and parietally, increasing during hyperventilation	No significantly abnormal features	None
11	20 M	Regional ileitis	50-100	1,400	15 days	Irregular, 5-7/sec.	Further slowing to 4-5/sec., especially during hyperventilation	Schizoid features	None
12	36 F	Toxic diffuse goiter	100	1,700	17 days	Rare alpha, disorganized 4-6/sec.; 10-12/sec. activity during hyperventilation	More disorganized; no alpha; further slowing to 3/sec. during hyperventilation	No significantly abnormal features	Increased tension and irritability
13	42 F	Toxic diffuse goiter	100	1,700	17 days	Alpha present: 12-13/sec.; occasional 4-7/sec.	Increased 4-7/sec. activity, especially during hyperventilation	No significantly abnormal features	None
14	24 F	Schizophrenia	200	2,000	10 days	Rare alpha; irregular 5-7/sec.	Further slowing to 3-4/sec.; increased incidence of 5-7/sec.; slow activity often in bursts	Emotional instability; schizoid	No significant changes
15	39 F	Schizophrenia	200	2,000	10 days	Normal, 10/sec.	No significant change	Emotional instability; schizoid	No significant changes

ELECTROENCEPHALOGRAPHIC OBSERVATIONS

Prior to their treatment with pituitary adrenocorticotropic hormone 7 of the patients had essentially normal electroencephalographic records. One patient had one normal and one slightly slow record. Seven patients had basically slightly slow records characterized by occasional runs of low to medium voltage activity at a rate of 5 to 7 cycles per second.

During the course of hormonal administration the records of 2 patients remained unchanged; records of one had been normal, of the other one had been slightly slow. The other 13 patients had significant changes of a moderate or severe degree in their records. These changes, which usually appeared three to five days after treatment was started, consisted of (*a*) reduction in amplitude, regularity and continuity of the basic alpha activity and slowing of the alpha activity, in the most striking case from a rate of 12 to 13 cycles per second to one of 7 to 8 cycles per second, and (*b*) the appearance of large amounts of slow activity (3 to 7 cycles per second) that occurred at random or in bursts, often increased in incidence or amplitude or both in response to hyperventilation.

In 1 instance spike activity appeared in addition to slowing, and in another there were runs of rapid activity (15 cycles per second) interspersed with the slow activity. Several examples of these changes are shown (figs. 1 and 2). The electroencephalographic abnormalities gradually became more pronounced during the course of treatment but reverted in most instances to the pretreatment level within one week after the drug was discontinued. The changes could not be conclusively correlated with drug dosage levels or alterations in blood sugar and electrolytes.

3. The pituitary adrenocorticotropic hormone was supplied by Dr. John R. Mote, medical director, Armour Laboratories.

NEUROPSYCHIATRIC CHANGES

Alterations in mood, affective responses and behavior were noted, in varying degree, in 10 of the 15 patients. The changes were mild to moderate in 8 of them. Those with rheumatoid arthritis showed, in

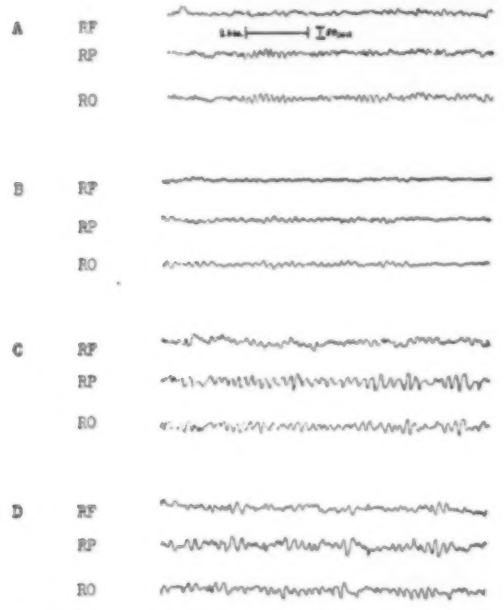


Fig. 1 (case 4).—All records shown in this and succeeding figures are from the right frontal (*RF*), parietal (*RP*) and occipital (*RO*) regions; calibration for 50 microvolts and time for one second indicated. *A*, electroencephalogram before treatment: essentially normal, somewhat irregular record; *B*, after five days of treatment (60 mg. pituitary adrenocorticotropic hormone per day): alpha activity lower in amplitude, less regular and discontinuous. Some 6 to 7 cycles per second activity has appeared; *C*, nine days after *B*, hormonal dosage 15 to 50 mg. per day: alpha activity is now rare, and a great deal of medium voltage, 5 to 7 cycles per second activity is seen throughout the record; *D*, seven days after *C* on the twenty-first day of treatment, 20 to 25 mg. of the drug per day: irregular record with persistent slow activity and a small amount of rapid activity (15 cycles per second).

general, an increasing feeling of well-being, alertness and some tension and irritability as the drug exerted its symptomatic effect on pain and movement. This occurred within the first three days of treatment. Six of these patients remained mildly elated or euphoric as long as the effect of the drug lasted but reverted rapidly, within one or two days, to their previous state after treatment was discontinued. One patient (case 2 in the table) became increasingly elated and showed progressive euphoria, hyperactivity and incessant talking. Administration of the drug was discontinued because of this reaction. One of the 2 patients with toxic diffuse goiter became more tense and irritable during the treatment; this occurred with a rise in basal metabolic rate (from +53 per cent to +75 per cent). The other patient did not manifest significant changes. Pronounced psychologic alterations were not noted in 1 case of dermatomyositis in which there was initial improvement in clinical symptoms. The patient with regional ileitis (basically a schizoid personality and possibly with a borderline psychosis) did not display further changes in his personality reactions. The 2 patients with schizophrenia also showed no definite alterations in mental symptoms; however, further investigation of the treatment of this disorder with pituitary adrenocorticotropic hormone is in progress.

The cases of 2 patients who manifested severe mental changes are reported in detail:

Case 6.—A married woman aged 42 with severe rheumatoid arthritis of nineteen years' duration was treated with the hormonal agent, 100 mg. a day for the first day, then 40 mg. a day for the duration of treatment. Within three days she became moderately euphoric and during the next few days increasing tension, irritability, insomnia and pressure of speech gradually appeared. During this time the arthritic symptoms had been greatly relieved and she was ambulatory. Finally psychomotor hyperactivity became severe, and it was apparent that a fully developed manic psychotic reaction had occurred. The drug was discontinued after thirteen days of administration because of this reaction. Two electroencephalograms taken at the height of the psychosis showed pronounced disorganization of alpha activity, slow waves (4 to 7 cycles per second) and interspersed rapid activity (15 cycles per second). The results of neurologic examination during this time remained normal, and the sensorium was always clear. She had no insight into her mental disturbance.

During the ten day period following drug stoppage the mental symptoms of the patient persisted unchanged and the arthritic symptoms did not relapse. The patient could not be managed on the medical service and was transferred to the Psychiatric Institute. No change occurred, and a state of exhaustion developed in the patient. She was then given electroconvulsive therapy, two treatments on one day and one each on the two following days. She refused further treatment; nevertheless her manic reaction cleared completely. About one month later joint pain and restriction of movement returned, and she had persistent minor daily fluctuations in mood.

Prior to her illness she had shown lability and a highly active, outgoing personality. During her illness she became bitter, resentful and depressed but showed many attempts at compensation. There had been some delay in arranging for the present hospital admission. She became more anxious and depressed and made a suicidal attempt ten days prior to admission.

Case 9.—A married woman aged 35 who had dermatomyositis was treated with 100 mg. of pituitary adrenocorticotropic hormone daily for eighteen days. Four days after the beginning of treatment she became lethargic and incontinent of urine, and an unsteady gait developed; her speech was dysarthric, and there was a tendency toward wandering in her ideation. There were no other positive observations on neurologic examination. The treatment was continued, and this state cleared after a few days. During this time definite changes in the electroencephalogram had appeared. On the seventeenth day of treatment the patient rapidly went into a state of stupor, which lasted about thirty-six hours and then cleared spontaneously.

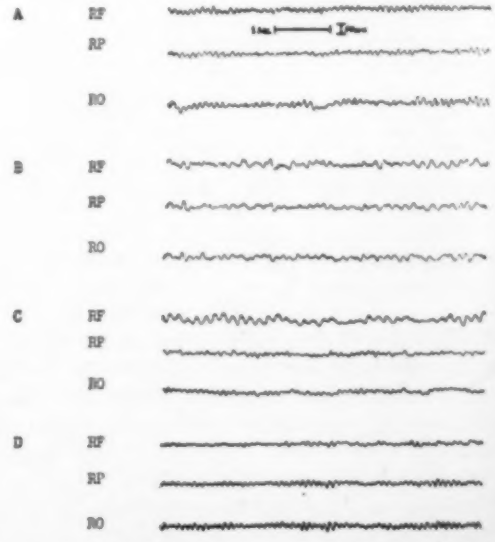


Fig. 2 (case 10).—Records from the right frontal, parietal and occipital areas; time and calibration as in figure 1. *A*, electroencephalogram before treatment: essentially normal; *B*, after seven days of treatment (100 mg. of the drug per day): irregular slow activity, 4 to 5 cycles per second and 5 to 7 cycles per second, is seen throughout. The alpha activity has disappeared; *C*, after the drug had been discontinued for one week: persistent 5 to 6 cycles per second activity is seen in the frontal areas; *D*, four days after *C*, eleven days after the drug was discontinued, the record is essentially normal throughout.

Neurologic observations during this episode were not significant. An electroencephalogram taken one day prior to the onset of this reaction had shown a spontaneous notable improvement, but a record taken during the stupor was again decidedly abnormal with dominant 5 cycle per second activity throughout. The electroencephalographic changes of this patient are shown in

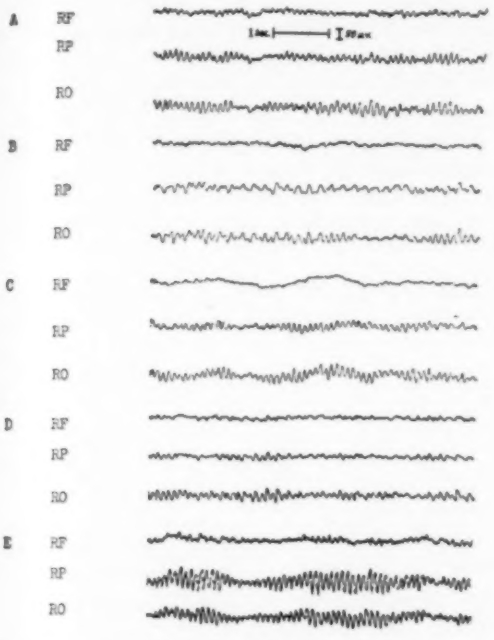


Fig. 3 (case 9).—All records from the right frontal, parietal and occipital areas; time and calibration as in the other two figures. *A*, electroencephalogram before treatment: essentially normal record; *B*, after nine days of treatment, 100 mg. of the drug per day: the alpha activity has disappeared completely and is replaced by 4 to 5 cycles per second activity throughout; *C*, seven days after *B*, on the sixteenth day of treatment, dosage unchanged, 100 mg. of the drug per day: this record shows spontaneous improvement with approximately normal alpha activity throughout; *D*, two days after *C*, on the eighteenth day of treatment: at this time the patient was in a state of stupor; 5 to 7 cycles per second activity has reappeared; *E*, after the drug had been discontinued for eight days: the record is again essentially normal, with good parietal and occipital alpha activity.

figure 2. Treatment with the drug was discontinued, and eight days later the electroencephalogram showed the normal pretreatment pattern.

This patient had been regarded as emotionally unstable and maladjusted in her marital life. She had shown episodes considered to be hysterical in the past. At these times the symptoms were mainly those of muscular weakness.[4] The reaction which developed during the course of drug therapy was of an organic reaction pattern, with definitely correlated electroencephalographic abnormalities. The alterations of the records, premorbid personality characteristics and mental changes of all patients are summarized in the accompanying table.

COMMENT

The present study has shown that electroencephalographic and neuropsychiatric changes occur in patients treated with pituitary adrenocorticotropic hormone. Thirteen of 15 patients manifested electroencephalographic abnormalities. Nine of the patients with changes also had mental symptoms. Ten of the 15 patients showed neuropsychiatric changes. For 2 of these in whom severe mental symptoms developed the records showed abnormalities. In 8 patients mild to moderate mental symptoms developed. Only 1 of these did not show electroencephalographic changes (case 8), and the euphoric reaction of this patient was mild. Thus, there is a suggestive correlation between the development of mental symptoms and electroencephalographic abnormalities in this series.

4. Muscular weakness, one of the symptoms of dermatomyositis, might have been misinterpreted in this case.

In order to attempt a fuller understanding of these observations a review of the pertinent physiologic effects of the hormone is indicated. These physiologic changes are generally due to the induced hyperactivity of the adrenal cortex. The most significant alterations are[5]: sodium and chloride retention with associated water retention, potassium excretion, elevated serum carbon dioxide–combining capacity (with occasional hypochloremic alkalosis), decreased sodium and chloride in the sweat, increased gluconeogenesis with hyperglycemia, a diabetic-type dextrose tolerance curve and increased deposition of liver glycogen, decreased serum inorganic phosphorus, falls in circulating eosinophils and lymphocytes associated with a leukocytosis (neutrophilic), increased uric acid excretion, decreased serum cholesterol (free), increased calcium excretion, increased excretion of 11-oxysteroids, 17-ketosteroids and creatine, and a negative nitrogen balance. In some patients there develop acneform eruptions, hypertension and hirsutism. These changes occur to a varying degree in each instance. The drug therefore produces increased secretion of the three major groups of adrenal steroids: electrolyte regulating, carbohydrate regulating and androgens. Many of the foregoing occur in Cushing's syndrome, and this clinical picture has been approximated in several patients receiving hormonal therapy.[1]

The electroencephalographic changes cannot be explained adequately on the basis of these known physiologic alterations at the present time. In this series there was no conclusive correlation between the electroencephalographic abnormalities and changes in blood sugar or electrolytes. The following factors should be considered:

1. Alterations in dextrose metabolism. In most cases hyperglycemia occurs, but there may be defects in intermediary metabolism or in cerebral utilization of dextrose.

2. Interference with the acetylcholine cycle. Torda and Wolff[6] reported defective in vitro synthesis of acetylcholine by brains of rats treated with the hormonal agent. Yet in other in vitro experiments adrenocortical steroids seem to enhance the synthesis of acetylcholine.[7]

3. Water retention. This would seem to be significant, yet patient 14 of this series gained 23 pounds (10.4 Kg.) as the result of hydration and was 1 of the 2 patients without electroencephalographic abnormalities.

4. Disturbances in potassium balance. A decrease in serum potassium occurs, but too little is known to correlate this with electroencephalographic alteration.

5. Alkalosis, although an inconstant finding, may be an important factor. Hyperexcitability of neurons is known to occur in the presence of this state[8] and is particularly seen in tetany. After pituitary adrenocorticotropic hormone therapy, changes in serum calcium are too variable to be considered significant in this respect.

6. A peculiar "toxic" effect of the hormone or of excessive adrenocortical steroids might be considered. Selye[9] has reported an anesthetic or hypnotic effect of

5. Forsham, P. H.; Thorn, G. W.; Prunty, F. T. G., and Hills, A. G.: Clinical Studies with Pituitary Adrenocorticotropin, J. Clin. Endocrinol. **8**: 15-66, 1948.

6. Torda, C., and Wolff, H. G.: Effect of Adrenotrophic Hormone of Pituitary Gland on Ability of Tissue to Synthesize Acetylcholine, Proc. Soc. Exper. Biol. & Med. **57**: 137-139, 1944.

7. Torda, C., and Wolff, H. G.: Effect of Steroid Substance on Synthesis of Acetylcholine, Proc. Soc. Exper. Biol. & Med. **57**: 327-330, 1944.

8. Gasser, H. S., and Grundfest, H.: Action and Excitability in Mammalian A Fibers, Am. J. Physiol. **117**: 113-133, 1936.

9. Selye, H.: Studies Concerning Anesthetic Action of Steroid Hormones, J. Pharmacol. & Exper. Therap. **73**: 127-141, 1941.

large doses of steroids. Adrenocortical steroids have also been reported to have anticonvulsant properties,[10] but the mechanism of this effect has not been clarified.

7. One other possible factor is the hypertension produced in some cases, particularly those treated for several weeks. In 1 case of acute lupus erythematosus, not included in this present study, a subarachnoid hemorrhage followed an acute rise in blood pressure after treatment with adrenocorticotropic hormone for three days.

It is evident that the electroencephalographic changes cannot be attributed to any one of the factors already enumerated. It is probable that several of these or other as yet unknown factors are operating to produce these electroencephalographic abnormalities in any individual case.

Previously there have not been reports of electroencephalographic changes after administration of the hormone. However, there are several brief observations of electroencephalographic changes in relation to adrenocortical steroid administration or dysfunction of the adrenal cortex. Grenell and McCawley[11] noted "increase in amplitude and some change in frequency of brain waves" after administration of adrenocortical extract to cats and "incipient changes of a similar nature" after administration of this extract to human subjects. Boland and Headley[12] noted increase in frequency of alpha waves after administration of cortisone. We have observed 2 patients with rheumatoid arthritis who have been treated with cortisone, one after an initial course of pituitary adrenocorticotropic hormone therapy. In both of these a slight slowing of alpha activity appeared which was much less pronounced than that observed in the series of patients receiving the latter drug.

It seems, therefore, that there is a significant relationship between adrenocortical activity and the electrical activity of the brain. At present the physiologic basis of this is obscure. Prior to treatment 8 of our 15 patients had shown mildly abnormal electroencephalographic tracings. This would strongly suggest metabolic or other changes of a minor degree reflecting on activity of the central nervous system.

Minor mental reactions such as euphoria have been reported in cases of rheumatoid arthritis treated with cortisone and pituitary adrenocorticotropic hormone.[13] These reactions can probably be regarded as normal responses to relief from chronic disease or acute painful symptoms. One patient (case 1) after therapy with pituitary adrenocorticotropic hormone was treated with cortisone and was capable of describing the different effects of the two drugs. Both relieved the arthritis and produced a feeling of well-being or mild euphoria. With the former drug the patient was tense, irritable, insomnic and unable to concentrate because of mental hyperactivity. While receiving cortisone the patient felt "more nearly normal," had no difficulty sleeping and was able to concentrate and carry on his business. Electroenecphalographic changes occurred while he was receiving cortisone, but to a lesser extent than during therapy with pituitary adrenocorticotropic hormone.

In this series, more severe mental changes have been observed. At least two important factors should be considered in relation to these disturbances:

1. The occurrence of an organic mental reaction related to the physiologic changes previously discussed. The stuporous state of 1 patient (case 9) of this series and the correlated electroencephalographic abnormalities can be regarded as an example of this type of reaction.

2. A released psychotic reaction with exaggeration of premorbid personality trends. This could be considered, for example, in case 6 of this series (manic psychotic reaction). Certainly both factors could be operating in any particular case. Many diseases now under treatment with pituitary adrenocorticotropic hormone (rheumatoid arthritis and allergic states) have received intensive psychiatric investigation.[14] The role of the adrenal cortex in relation to personality changes has also been emphasized recently. Neuropsychiatric disturbances (particularly paranoid manifestations) have been described in states of hyperadrenalism.[15] Schizophrenic patients are reported to show defective adrenocortical responses to stress.[16]

SUMMARY

1. Pituitary adrenocorticotropic hormone (ACTH) was administered to 15 patients with a variety of diseases.

2. Significant changes in the electroencephalogram occurred in 13 of the 15 cases.

3. Psychiatric changes, in 2 instances severe, occurred in 10 of the 15 patients.

4. The mode of production of either type of change is not clear. Various physiologic and psychologic factors are discussed.

5. The present report is regarded as preliminary, and further studies are in progress.

6. It should be emphasized that powerful sideeffects may accompany the therapeutic achievements of pituitary adrenocorticotropic hormone. This is especially important in view of the necessity of long-range planning for the use of the compound in chronic diseases.

622 West 168th Street (32).

10. McQuarrie, I.; Anderson, J. A., and Ziegler, M. R.: Observations on the Antagonistic Effects of Posterior Pituitary and Cortico-Adrenal Hormones in the Epileptic Subject, J. Clin. Endocrinol. **2**: 406-410, 1942. Spiegel, E., and Wycis, H.: Anti-Convulsant Effects of Steroids, J. Lab. & Clin. Med. **30**: 947-953, 1945.

11. Grenell, R. G., and McCawley, E. L.: The Effects of Adrenal Cortical Extract on the Electroencephalogram, Federation Proc. **6**: 116-117, 1947.

12. Boland, E. W., and Headley, N. E.: Effects of Cortisone Acetate on Rheumatoid Arthritis, J. A. M. A. **141**: 301-308 (Oct. 1) 1949.

13. Hench, P. S.; Kendall, E. C.; Slocumb, C. H., and Polley, H. F.: The Effect of a Hormone of the Adrenal Cortex (17-Hydroxy-11-Dehydrocorticosterone: Compound E) and of Pituitary Adrenocorticotropic Hormone on Rheumatoid Arthritis: Preliminary Report, Proc. Staff Meet., Mayo Clin. **24**: 181-197, 1949. Ragan, C.; Grokoest, A. W., and Boots, R. H.: The Effect of Adrenocorticotropic Hormone (ACTH) on Rheumatoid Arthritis, Am. J. Med. **7**: 741-750, 1949.

14. Johnson, A. M.; Schapiro, L. B., and Alexander, F.: Preliminary Report on a Psychosomatic Study of Rheumatoid Arthritis, Psychosom. Med. **9**: 295-300, 1947.

15. Broster, L. R., and others: Discussion: Overactivity of Adrenal Cortex, Proc. Roy. Soc. Med. **40**: 35-46, 1946. Soffer, L. J.: Diseases of the Adrenals, Philadelphia, Lea & Febiger, 1946.

16. Pincus, G.; Hoagland, H.; Freeman, H.; Elmadjian, F., and Romanoff, L. P.: A Study of Pituitary-Adrenocortical Function in Normal and Psychotic Men, Psychosom. Med. **11**: 74-101, 1949.

Misunderstandings to be Avoided.—A physician, in his relationship with a patient who is under the care of another physician, should not give hints relative to the nature and treatment of the patient's disorder; nor should a physician do anything to diminish the trust reposed by the patient in his own physician. In embarrassing situations, or whenever there seems to be a possibility of misunderstanding with a colleague, a physician should seek a personal interview with his fellow.—Section 1, Chapter III of the PRINCIPLES OF MEDICAL ETHICS of the American Medical Association.

MIDCENTURY WHITE HOUSE CONFERENCE ON CHILDREN AND YOUTH

HENRY F. HELMHOLZ, M.D.
Washington, D. C.

Since the turn of the century the United States has concerned itself periodically with the preservation of its greatest asset, the children of the nation. The Midcentury White House Conference on Children and Youth is the fifth of a series. The first was held in 1909 on call of President Theodore Roosevelt in particular to study the dependent child. It resulted in fifteen recommendations, the most important of which was the establishment of a Children's Bureau, which occurred in 1912. The second White House Conference, called by President Wilson in 1919, set standards for children entering employment and for protection of health of mother and child and of those in need of special care.

The third conference, called by President Hoover in 1930, was concerned with the total aspects of all children. Twelve hundred experts worked for sixteen months on the needs of children, which were considered under four heads: medical services; public health and administration; education and training, and the handicapped. The results were published in thirty-two volumes, many of which are still standard in their field. This conference resulted in the Children's Charter (a set of nineteen points embodying the main recommendations of the conference concerning the rights of all children and the aims toward which the conference hoped to lead the public thought and action for the children of the country) and a great advance in pediatrics and pediatric education. It was the first conference to devote attention to growth and development of children. The fourth conference, called by President Franklin D. Roosevelt, was to determine how children in a democracy can best be helped to grow into the kind of citizens who will know how to preserve and protect the nation's democracy.

In September 1949 President Truman appointed fifty-two citizens particularly interested in child health and welfare to serve on the National Committee of the Midcentury White House Conference on Children and Youth. Although considerable work has been done in thirty-four states in preparation of the conference, it was not until the first meeting of this National Committee that the focus of the conference was decided.

"The Midcentury White House Conference bases its concern for children on the primacy of spiritual values, democratic practice and the dignity and worth of every individual. Accordingly, the purpose of the conference shall be to consider how the mental, emotional and spiritual qualities essential to individual happiness and to responsible citizenship can be developed in children and what physical, economic and social conditions are deemed necessary to this development."

At first it may seem a far cry from the treatment of the sick to the raising of the child to responsible citizenship. I recall some of my experiences in forty years in the practice of pediatrics to show how the responsibilities of physicians have widened in scope. In 1911, when Miss Ahrens and I started the work of the Chicago Infant Welfare Society, one of my first duties was to visit the physicians who practiced in the area in which we planned to establish our well baby stations. Without exception, the physicians were willing to have us look after the feeding of well babies, provided we did not take care of the sick. Many volunteered that feeding babies was something for grandmothers or nurses to do or that the directions on the can should be followed. How different today. Infant mortality rates of 120 to 150 per thousand live births in 1905 have been reduced in most of the states to below 50 and in some even below 30. In no small measure gratitude for this accomplishment goes to the general practitioner, who has since received training in the medical school in the care and feeding of the child and who is taking care of 75 per cent of the babies. His education has helped him to assume the responsibilities in disease prevention. In like manner, I recall the prominent Minnesota practitioner at my first meeting of the Minnesota Public Health Association in the early 1920's who said, "You are taking the bread out of our mouths," in a discussion of a paper on the prevention of diphtheria by immunization. This lack of appreciation of the duty of the physician to prevent disease as well as to cure it is now a thing of the past. With the help of the Children's Bureau and the Public Health Service, the study of the Academy of Pediatrics showed that the general practitioner gives 30 per cent of the time he devotes to children to preventive measures and 70 per cent to treating disease. According to this same study, it is the general practitioner who takes care of 75 per cent of the children; the pediatrician takes care of only 11 per cent of the children and other specialists of the remaining 14 per cent.

A further stage in the extension of the field of medicine in which the pediatrician has made a considerable advance is in the prevention of the behavior disturbances of infancy and childhood. All physicians are greatly indebted to the late Dr. C. Anderson Aldrich for teaching them the importance of a proper understanding of growth and development in the care and treatment of the normal child as well as the sick child. The establishment of the Rochester Child Health Institute in January 1944 with Dr. Aldrich as its director was the culmination of much preliminary work to see what the application of these principles of growth and development could do for the children of an entire community. Our ideas were based on the conception that health as such was not an end in itself but was a means to the end that the happy child grow into responsible citizenship. To state it another way, what success have we attained if our efforts have given us a physically healthy criminal with a life expectancy of ten or twenty additional years in which to carry out his antisocial schemes?

Our study is now almost six years old, and we have learned much by our successes as well as by our failures. We know that over 90 per cent of infants will decide for themselves on a schedule of three meals a day before the end of the first year. We know that in spite of all our efforts 30 per cent of the children when they reach the end of the second year still have some difficulty with feeding, sleeping or elimination. We know that the play center which brings together a psychologist, a nursery school teacher and a group of mothers and their children suffering from some behavior disturbances is an excellent means of greatly reducing and in

Read before the Pediatric Section of the Clinical Session of the American Medical Association, December 9, 1949.
Chief Consultant, Mid Century White House Conference on Children and Youth.

many instances completely getting rid of the disturbance of behavior by a weekly play period of two to three hours. Eight to twelve sessions are usually sufficient to restore to normal the strained relations between mother and child, the elimination of which is so important to the child's emotional development.

I come back again to the fact that general practitioners are taking care of 75 per cent of the American children and that most of them have had no course whatsoever in growth and development and its relationship to the prevention of the behavior disturbances of infancy and childhod; even now the students in many American medical schools are not receiving adequate training in growth and development.

As the general practitioner cares for 75 per cent of American mothers, he is in a position to advise mothers during their pregnancy as to their impending responsibilities as mothers in addition to the advice he gives them as to their proper physical care. With the birth of the child his responsibilities are greatly increased. He is the one who for the next six years will be more closely associated with the mother, and I hope the father also, than anyone else in working out a successful program for the emotional development of their child.

It is generally recognized that the earlier a behavior disturbance occurs, the greater is the likelihood of its having a lasting effect on the child. The first six years of a child's life are the foundation on which the edifice of personality will be constructed, and the later effects of school and community life can at times be crippling or maturing, depending on the basic foundation. In these first years the physician and nurse are in a key position to help the parents prevent behavior disturbances. Dr. Aldrich's little book, "Babies are Human Beings," [1] and Dr. Spock's book, "The Pocket Book on Baby and Child Care," [2] are helpful in assisting the general practitioner in solving some of his patient's problems. The physician is so vital in this program that he needs special training in this important field both when he is in the medical school and after graduation. He also needs to learn to appreciate the help that the public health nurse, the social service worker, the teacher and the psychiatrist can give him in working out specific problems.

The theme of the Midcentury White House Conference—the development in children of mental, emotional and spiritual qualities that will lead to happy childhood and responsible citizenship—has been related herein to the general practitioner and his great opportunity for rendering services. I want to outline plans of the conference: "(*a*) to bring together in usable form pertinent knowledge related to the development of children, and indicate areas in which further knowledge is needed; (*b*) to examine the environment in which children are growing up, with a view to determining its influence on them; (*c*) to study the ways in which the home, the school, the church, welfare agencies and other social institutions, individually and cooperatively, are serving the needs of children; (*d*) to formulate, through cooperative efforts of laymen and specialist, proposals for the improvement of parental, environmental and institutional influences on children, and (*e*) to suggest means whereby these proposals may be communicated to the people and put into action."

1. Aldrich, C. A., and Aldrich, M. M.: Babies Are Human Beings, New York, The Macmillan Company, 1945.
2. Spock, B.: Pocket Book of Baby and Child Care, New York, Pocket Books, Inc., 1949.

To accomplish these purposes, the National Committee of fifty-two persons appointed by the President elected an Executive Committee of sixteen members which appointed four advisory councils: the Council on Participation of National Organizations, the Advisory Council on Federal Government Participation, the Advisory Council on State and Local Action and the Advisory Council on Youth Participation. All these committees are engaged in gathering pertinent information and making plans to be put into action.

The Executive Committee also appointed four technical and special committees: the Committee on Fact Finding, the Committee on Communications, the Committee on Conference Meeting Program and the Committee on Budget and Finance.

The National Committee has four representatives on each of the councils, but each council elects its own chairman and is represented by him on the executive committee as an ex officio member.

There is medical representation on the Advisory Council on Participation of National Organizations, the Council on Federal Governmental Participation, and the Council on State and Local Action, as well as on the Technical committee on Fact Finding. A physician in general practice has been requested to represent the American Medical Association on the Advisory Council of National Organizations and the Technical Fact Finding Committee.

It is the first White House Conference in which youth is represented in the national committees and is taking an active part in the work of the councils and committees.

This conference is organizing the preliminary phase so as to enlist the participation of every one of 3,076 counties in the forty-eight States to assess itself as to its child health, educational and welfare needs and activities, particularly as they concern the theme of the conference. State committees have been appointed by governors in the fifty-three states and territories.

The county studies will be analyzed by the state committees and a state report sent to the staff of the Conference Committee, which will use this and all other material that it has gathered to make a composite report to the conference at its meeting in December 1950 on the national state of affairs. The national organizations will work with one another and also cooperate with the state and local groups. Governmental agencies have assigned personnel to the conference staff to help collect and analyze available data and aid in all aspects of the conference.

After the information from various sources has been analyzed and interpreted at the conference meeting in December, it must be communicated to the various states and localities, so that with the interest generated by studying their local conditions they will put into effect the recommendations of the conference. A special committee on communications will aid in presenting the material to the public in usable form.

The Midcentury White House Conference on Children and Youth has received an appropriation of $75,000 from Congress for 1949-1950, but this represents only about one sixth of the amount needed to meet its contemplated budget, the remainder of which is being raised from private sources.

Let me emphasize the importance of the theme of this conference by a quotation from Dr. Brock Chisholm, the director general of the World Health Association:

> It would appear that this quality of maturity, this growing up successfully, is what is lacking in the human race generally, in ourselves and in our legislators and government which can only represent the people. Only when children have been helped to reach maturity successfully can we hope to have enough people able to see and think clearly and freely enough to be able to prevent the race going on as we have gone, from slaughter to bigger and better slaughter.

It is our hope and intent to bring finally to the general practitioner more information and specific help in filling even better his key position in assisting the healthy growth and development, in the broadest sense, of the nation's children, its greatest asset.

ANTISPASMODIC DRUGS

Evaluation of Their Effects on the Motor Activity of the Upper Portion of the Small Intestine in Man

WILLIAM P. CHAPMAN, M.D.
EIRWYN N. ROWLANDS, M.D.
and
CHESTER M. JONES, M.D.
Boston

The purpose of this communication is to present in summary form our results of testing the effects of a number of commonly used antispasmodic drugs on the motility of the upper portion of the small intestine in man. The agents have been administered in the usual therapeutic doses to healthy young adults, and their action has been recorded by a multiple-balloon water manometer system. In spite of the numerous studies on this subject, the results have often been conflicting.[1] The discrepancies have in part been due to differences in experimental methods and technics and to inadequate control observations. Our studies have been an attempt to minimize the variables due to these factors by employing standardized testing procedures and observing changes in motility over long test periods following the administration of placebos. Perhaps an additional variable has been more adequately controlled by using as experimental subjects persons with normal intestinal function.

Fifty-one observations have been made in 22 different subjects. In addition to the 14 placebo studies, tests were carried out with the following drugs: orally given atropine, tincture of belladonna, amprotropine phosphate (syntropan®), pavatrine hydrochloride® (beta-diethylaminoethyl fluorene-9-carboxylate hydrochloride), asymatrine hydrobromide® (diethylaminoethyl phenylthienyl acetate hydrobromide) and adiphenine hydrochloride (trasentine hydrochloride,® diphenylacetyl-diethylaminoethanol hydrochloride). Eleven of the 12 subjects who were studied with placebos were tested with one or more of the drugs. The details of the method and the results with each drug will be reported elsewhere.[2] The four lumen tube used in these experiments, a five minute sample of a graphic record and types of wave patterns representing nonpropulsive and propulsive waves are shown in figure 1. Each balloon was connected to its water manometer by a separate lumen. The lines extending between the tube and the graphic record on the left indicate the position of each balloon tracing. As illustrated on the right, the small, relatively rapid waves were nonpropulsive in character. The high, sustained contractions with the broad base were found to be associated with a forward movement of barium and were regarded as propulsive or peristaltic in type. Tone, or the sustained tension of the bowel wall, was indicated by the resting level of the contractions.[3] Changes in propulsive waves were evaluated by visual inspection of the records and total contractions, and tone by measurements of the surface areas of the tracings for five minutes at uniform fifteen minute intervals. The average duration of the recording periods was slightly over four hours, with nearly fifty minutes elapsing on an average before the medicaments or placebos were given.

RESULTS

1. *Orally Given Atropine and Tincture of Belladonna.*—Propulsive Contractions: A comparison of the effect of placebos, orally given atropine in doses varying from 0.45 to 0.6 mg. and 0.4 cc., or 20 drops, of tincture of belladonna is shown in figure 2. The mean values represent the percentage change in propulsive waves as compared to the average activity during the forty-five minute premedication interval for each group. Beginning at thirty minutes after the administration and continuing throughout the remainder of the test periods, the mean values for the 14 placebo observations showed a decrease in propulsive waves averaging 27 per cent less than the mean of the levels before the placebos were given. The range of the decline in activity for

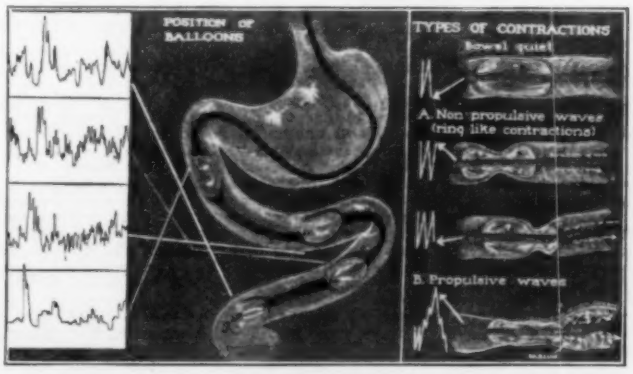


Fig. 1.—Illustration showing position of the four balloons in the upper portion of the small intestine, the types of contractions and a graphic record of motility for a five minute period. The lines indicate the tracing for each balloon. The small, rapidly occurring waves are nonpropulsive, and the high, sustained waves with a relatively broad base are regarded as propulsive or peristaltic contractions. The direction of the wave is forward (toward the right).

From the Medical Services, Massachusetts General Hospital, and the Department of Medicine, Harvard Medical School.

Read before the Section on Gastro-Enterology and Proctology at the Ninety-Eighth Annual Session of the American Medical Association, Atlantic City, N. J., June 9, 1949.

This study was supported by grants from Hoffmann-LaRoche, Inc., Nutley, N. J., and G. D. Searle & Co., Chicago.

1. (*a*) Elsom, K. A., and Drossner, J. L.: Intestinal Studies of Human Small Intestine: Effect of Atropine and Belladonna on Motor Activity of Small Intestine and Colon, Am. J. Digest. Dis. **6**: 589, 1939. (*b*) Ingelfinger, F. J.: The Modification of Intestinal Motility by Drugs, New England J. Med. **220**: 114, 1943. (*c*) Huidobro, F.; Montero, E., and Cuevas, F.: The Effect of Certain Drugs on the Motility of the Jejunoileum in Normal Man, Surg., Gynec. & Obst. **78**: 471, 1944. (*d*) Posey, E. L., Jr.; Bargen, J. A.; Dearing, W. H., and Code, C. F.: The Effects of Certain So-Called Antispasmodics on Intestinal Motility, Gastroenterology **2**: 344, 1948.

2. Chapman, W. P., and Palozzo, W. L.: Multiple-Balloon-Kymograph Recording of Intestinal Motility in Man with Observations on the Correlation of the Tracing Patterns with Barium Movements, to be published.

3. Chapman, W. P.; Rowlands, E. N.; Taylor, A., and Jones, C. M.: Multiple-Balloon-Kymograph Recording of Variations in Motility of the Upper Small Intestine in Man During Long Observation Periods Before and After Placebo Administration, to be published.

any fifteen minute period was from plus 6 to minus 43 per cent. An analysis of the records revealed that the initial decrease in contractions, at the forty-five to ninety minute postplacebo period, was associated with the spontaneous occurrence of spasms in 8 of the 14 tests. These spasms, indicated by a sustained elevation of the resting level of the contractions, lasted anywhere from five to twenty minutes. During their presence, and for as long as twenty minutes afterward, the propulsive waves were usually decidedly decreased or abolished.[3] The diminution in propulsive waves in the placebo tests, therefore, was in part explained by the occurrence of spasms.

The orally given atropine (crosshatched arrows) and tincture of belladonna (black arrows) produced a much more striking fall in propulsive contractions than that noted with the placebos. The maximal effect of both drugs was apparent in seventy-five minutes after their administration. At this time the mean values for orally given atropine and for tincture of belladonna were both about 80 per cent less than the predrug levels. For the next one and three-quarter hours the drug

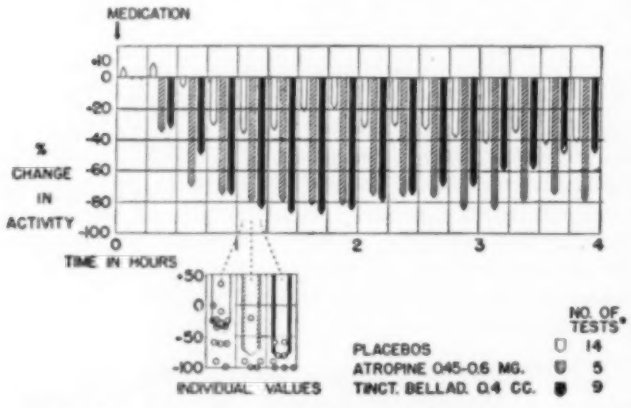


Fig. 2.—Effect of tincture of belladonna, orally given atropine and placebos on propulsive contractions (predrug and postdrug mean values compared). The chart shows the percentage decrease in propulsive contractions following the administration of placebos (white arrows), oral atropine (crosshatched arrows) and tincture of belladonna (black arrows) over a four hour observation period. The maximal effect was obtained with both drugs in the one to one and one-quarter hour period. The individual test values for this period are shown by the scattergram. Except for the last hour of observation the drug effects were much more striking than the changes occurring with the placebos. The mean values for each one-quarter hour period were obtained as follows: propulsive activity for each test per fifteen minute period was first compared with its average value for the forty-five minute predrug period. The average values were then obtained by dividing the sums of the individual test values by the number of tests in each period.

* The number and duration of the tests were as follows: placebos, 13 tests for two hours, 9 for three hours and 6 for four hours; orally given atropine, 5 tests for two hours, 4 for three hours and 2 for four hours, and tincture of belladonna, 7 tests for two hours, 6 for three hours and 5 for four hours.

effects were comparable and caused a decrease in contractions that was at all times at least 50 per cent greater than that observed in the placebo tests. Thereafter, the tincture of belladonna was relatively less effective than orally given atropine, although the smaller number of observations during this latter period made the comparison less significant.

Total Contractions: The mean values for changes in total contractions, as determined by the measurements of the surface area above the resting level of the contractions, are shown in figure 3. These values were expressed as the percentage changes compared to the average of the levels for forty-five minutes before the medicaments were given in each particular test. The trend was the same as that noted for the propulsive waves. Tincture of belladonna produced a striking fall in total contractions in forty-five minutes, with the maximal effect occurring thirty minutes later. The maximal effect, except for one fifteen minute interval, continued for the next sixty minutes and was at least 50 per cent more decided than the spontaneous decrease

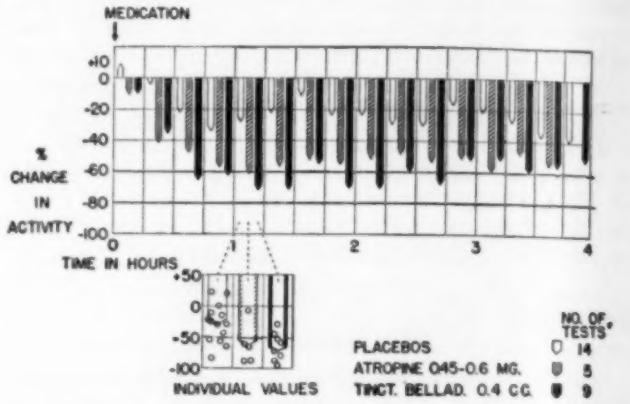


Fig. 3.—Effect of tincture of belladonna, oral atropine and placebos on total contractions (predrug and postdrug mean values compared). The chart shows that orally given atropine (crosshatched arrows) and tincture of belladonna (black arrows) caused a much more striking decrease in total contractions than was noted following the administration of placebos (white arrows). The maximal drug effect was obtained during the one to one and one-quarter hour period. The individual variations in the three groups for that fifteen minute interval are shown by the scattergram. Total contractions were measured for the five minute period just preceding each one-quarter hour interval. The mean values were calculated in the same manner as for the propulsive contractions shown in figure 2.

* The number and duration of the tests were as follows: placebos, 13 tests for two hours, 8 for three hours and 4 for four hours; orally given atropine, 5 tests for two hours, 4 for three hours and 2 for three and three-quarter hours, and tincture of belladonna, 7 tests for two hours, 6 for three hours and 5 for four hours.

in contractions with the placebos. The effect of orally given atropine was about the same as that of tincture of belladonna, the maximal effect occurring in about seventy-five minutes, with only a slight recovery of contractions occurring during the next two and one-half hours. In contrast to the action of the drugs the

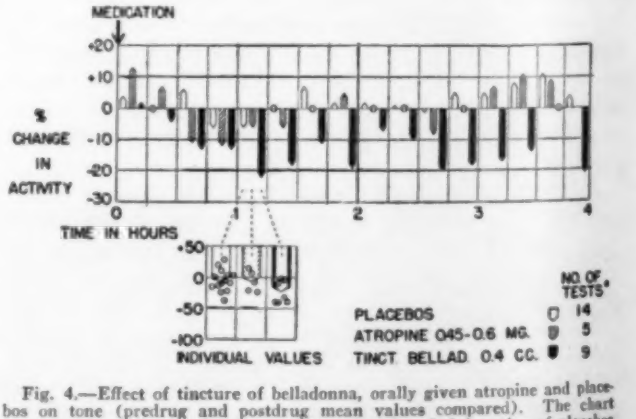


Fig. 4.—Effect of tincture of belladonna, orally given atropine and placebos on tone (predrug and postdrug mean values compared). The chart show the percentage change in tone following the administration of placebos (white arrows), oral atropine (crosshatched arrows) and tincture of belladonna (black arrows) over a four hour observation period. The open circles along the zero line on the main chart indicate no change in tone. Tincture of belladonna caused a slight but consistent decrease in tone as compared to the slight and inconsistent changes in tone in the orally given atropine and placebo tests. The individual values at the one to one and one-quarter hour interval for the three groups are shown by the scattergram. The values for the percentage change in activity were calculated in the same manner as for the propulsive contractions shown in figure 2.

* The number and duration of tests were the same as for total contractions shown in figure 3.

average decrease in total contractions in the placebo tests was considerable less. The decline in activity, beginning with the first thirty minute postplacebo

period, averaged 27 per cent with a variation from 11 to 40 per cent.

Tone: The alterations in tone in the three groups of tests were much less striking than the changes in contractions. Tone remained essentially unchanged following the administration of the placebos and atropine (fig. 4). The mean values for both groups were within a range from plus 15 to minus 15 per cent. Tincture of belladonna produced a slight but consistent decrease in tone, the maximal effect appearing in seventy-five minutes after the drug was given. During the next two hours, when a minimum of 6 subjects was included in the tests, the variations in tone were from minus 20 to minus 7 per cent.

The individual variability in propulsive contractions, total contractions and tone, and the difficulties of evaluating changes in nonpropulsive waves have been considered in detail elsewhere.[4] The ranges of variation, typical of the three groups of tests, are shown by the scattergrams for a uniform fifteen minute period in the lower portion of figures 2, 3 and 4. It was apparent that the wide, spontaneous fluctuations in motility encountered in the placebo experiments were much

DRUGS	NUMBER OF TESTS	ANTISPASMODIC EFFECT ON CONTRACTIONS	ANTISPASMODIC EFFECT ON TONE	SIDE REACTIONS
PAVATRINE®	9	○○○○○○○○●	○○○○○○○○○	NONE
ASYMATRINE HYDROBROMIDE®	5	○○○○●	○○○○○	NONE
AMPROTROPINE PHOSPHATE®	5	○○○○○	○○○○○	DIZZINESS - (I.M. ROUTE)
TRASENTINE®	4	○○○○	○○○○	NONE

Fig. 5.—Effect of newer antispasmodic drugs on motility of upper portion of the small intestine. The number of ineffectual tests (showing no antispasmodic effect on contractions or tone) is shown by the open circles. The number of effectual tests (having an antispasmodic effect) is shown by the black dots. Except for 1 pavatrine hydrochloride® and 1 asymatrine hydrobromide® test, the various drugs produced no effect not obtained with placebos. No results were obtained comparable to those observed with orally given atropine or tincture of belladonna. Amprotropine phosphate administered intramuscularly was the only drug which gave a side reaction. The average time that the drugs were studied was three hours. The route of administration was mostly oral. Drugs were given in the usual therapeutic dosage.

greater than the variations in the drug values at the time of their maximal effect. Nonpropulsive contractions seemed in general to change in the same direction as propulsive contractions, though to a lesser degree, in the three groups studied. However, one could not always be certain of this.

The only side reaction noted with orally given atropine or tincture of belladonna was moderate dryness of the mouth. This side effect was elicited in 5 of the 14 tests, and its presence or absence did not correlate with the magnitude of decrease in motor activity.

Newer Antispasmodic Drugs.—Changes in motor activity following the administration of amprotropine phosphate, pavatrine hydrochloride,® asymatrine hydrobromide® and adiphenine hydrochloride were compared to the observations in the placebo, orally given atropine and tincture of belladonna studies. A test was regarded as showing no drug effect if the maximal decrease in propulsive contractions, total contractions or tone was no greater than the average change in activity observed with placebos. A probable effect was taken to be one in which the maximal effect was greater than the average changes noted with placebos, provided this effect occurred within ninety minutes after administration and provided the decrease in activity was not related to the spontaneous occurrence of spasms. A belladonna alkaloid-like action was ascribed to any test in which the decline in activity was equal to the average effects noted with orally given atropine or tincture of belladonna.

Asymatrine Hydrobromide.®—Of the 5 tests with orally given asymatrine hydrobromide® 2 subjects received 50 mg. each, 2, 30 mg. each and 1, 40 mg. of the drug. No effect was obtained in four tests. A probable effect was obtained in 1 test with 30 mg. This positive result might be questioned inasmuch as this same subject, in his test with 40 mg. of the drug, showed no change in contractions.

Pavatrine Hydrochloride.®—Four tests were made with the oral administration of 250 mg. and 2 tests with 125 mg. of pavatrine hydrochloride.® In addition, 3 subjects were given 50 mg. of the drug as a rectal suppository. No probable effect was obtained except for 1 test with 125 mg. As this same subject showed no effect on a subsequent test with 250 mg. of pavatrine hydrochloride® given orally, it became questionable whether the result in her 125 mg. test represented a probable effect of the drug.

Adiphenine Hydrochloride.—In three tests with 150 mg. of orally given adiphenine (trasentine®) hydrochloride and one study with 50 mg. of the drug given intramuscularly, no effect on motility was obtained.

Amprotropine Phosphate.—Amprotropine Phosphate was given orally in doses of 50 mg. to 2 subjects, and 25 to 30 mg. was given intramuscularly to 3 subjects. A suggestive effect on motility was obtained in only 1 of the 5 studies. This subject showed a maximum decrease in propulsive waves twenty-five minutes after the oral administration of 50 mg. of the drug. At the same time segmental waves increased. Therefore, while propulsive waves were decidedly diminished for a period of one hour, total contractions were essentially unchanged.

As far as could be concluded by our test procedures, the newer antispasmodic drugs were ineffectual in decreasing the motility of the upper portion of the intestinal tract. These drugs also produced no side effects, with the exception of amprotropine phosphate administered intramuscularly. The drug given in this manner caused moderate dizziness.

CONCLUSIONS

As a result of these studies of the action of drugs on the upper portion of the small intestine in man we have come to the following conclusions:

1. A spontaneous decrease in propulsive contractions, averaging as much as 27 per cent with a range of plus 6 to minus 43 per cent occurred during 14 observations in 12 subjects following the administration of placebos.

The spontaneous decrease in total contractions for this group was about the same, the mean being 27 per cent with a variation from 11 to 40 per cent for the fifteen minute periods starting thirty minutes after the placebos were given. In individual tests the striking decline in contractions was almost always associated with the spontaneous occurrence of spasms. Effect of a drug purported to have a relaxing effect on contrac-

4. Chapman, W. P.; Rowlands, E. N., and Jones, C. M.: Multiple-Balloon-Kymograph Recording of the Comparative Action of Oral Atropine, Tincture of Belladonna, and Placebos on the Motility of the Upper Small Intestine in Man, to be published. Chapman, Rowlands, Taylor and Jones.[3]

tions seemed problematic unless the magnitude of its action was at least greater than the average changes occurring with placebos and unless its effect could not be due to spasms. Contrary to the alterations in propulsive waves and total contractions, tone tended to remain essentially unchanged.

2. Orally given atropine in doses varying from 0.45 to 0.6 mg. in 5 subjects and 0.4 cc., or 20 drops, of tincture of belladonna in 9 subjects produced an average decrease in propulsive waves and total contractions at least 50 per cent greater than that obtained with placebos. When considered individually, 1 atropine test and 1 test with tincture of belladonna produced changes no different from those obtained with placebo and were therefore regarded as ineffectual. Tincture of belladonna produced a slight decrease in tone, whereas the effect of orally given atropine on tone was equivocal. Spasms occurred in only 3 of the 14 tests with the belladonna alkaloids and were unimportant in accounting for the results obtained with these two drugs.

3. The newer so-called antispasmodic drugs, amprotropine phosphate (syntropan®), pavatrine hydrochloride® (beta-diethylamino ethyl fluorene-9-carboxylate hydrochloride), asymatrine hydrobromide® (diethylaminoethyl phenylthienyl acetate hydrobromide) and adiphenine hydrochloride (trasentine hydrochloride,® diphenylacetyl-diethylaminoethanol hydrochloride), when given in the usual therapeutic doses, produced no decrease in motility not observed with placebos, with the possible exception of 1 asymatrine hydrobromide® test and 1 pavatrine hydrochloride® test. None of the tests showed results comparable to that obtained in 12 of the 14 observations with orally given atropine or tincture of belladonna. Whether these newer antispasmodic drugs have a favorable effect on hypermotility and relieve symptoms due to such altered motor activity could not be answered by these experiments. Our subjects were healthy persons, with no symptoms referable to the upper portion of the small intestine when the drugs were given; they did not show hypermotility, as far as we could determine, during the tests. It seemed most unlikely, however, in view of these observations, that the action of the newer antispasmodic drugs on symptoms due to an abnormally active intestine would be greater than that obtained with atropine or tincture of belladonna.

The extent to which our observations have been confirmed by other investigators will be considered fully in other publications. In brief, it may be said that these results are in essential agreement with the findings of Elsom and Drossner,[1a] Huidobro and others,[1c] and with the more recent reports by Posey and associates,[1d] Kramer and Ingelfinger[5] and Lorber and Machella.[6]

4. The extreme variability in the patterns of intestine motility from subject to subject, and in a given person from hour to hour, as well as from one bowel segment to the other, has been discussed in detail elsewhere.[3] The pronounced variations noted in these studies made us hesitate to base any conclusions on calculations of statistical significance until a larger number of tests have been made, particularly in subjects receiving placebos as well as drugs.

270 Commonwealth Avenue.

5. Kramer, P., and Ingelfinger, F. J.: Use of Antispasmodics and Spasmodics in the Treatment of Gastro-Intestinal Disorders, M. Clin. North America **32**: 1227, 1948.

6. Lorber, S. H., and Machella, T. E.: The Effect of Syntropan on the Motor Activities of the Human Gastrointestinal Tract and on Gastric Acidity, Gastroenterology **12**: 57, 1949.

ABSTRACT OF DISCUSSION

Dr. Franz J. Ingelfinger, Boston: Belladonna alkaloids evoke a definite effect, but synthetic antispasmodics modify intestinal motility no more than does the administration of placebos. The moderate but apparently consistent effect of placebos suggests that psychogenic influences may be at play. But it is surprising that normal subjects, without specific attitudes or expectations, should so consistently manifest an inhibitory response. I am wondering whether the apparent effect of placebos might not be attributed in part to other causes. Motility normally diminishes as balloons pass down from the duodenum to the ileum. In the course of a three to four hour test, balloons lying beyond the duodenum tend to move downstream, even if the tube is fixed at the nose or an anchoring intragastric balloon is used, for the intestine will creep up over the balloon and will plicate itself, accordion fashion, on the tube. Second, records from a balloon maintained in a fixed duodenum suggest that this organ gradually exhausts itself in trying to expel the balloon. Hence, in evaluating the influence of placebos, the possible effects of shifts in position of balloons and of exhaustion should be considered. Finally, the emotional and physical fatigue of a subject exposed to prolonged intestinal intubation may affect intestinal motility. These considerations do not detract in the least from the excellent controls provided by the placebo studies. On the basis of these, Dr. Chapman has confirmed and extended other observations to the effect that many popular synthetic antispasmodics do not affect intestinal motility appreciably, at least as far as can be determined by balloon kymographic methods. Balloon methods, of course, are subject to many objections. One cannot be sure that the intestinal motility stimulated and recorded by a balloon simulates the motor disorder in a patient with gastrointestinal complaints. In an effort to overcome this objection in part, I have produced artificial intestinal obstruction by a second balloon lying distal to the recording balloon. The results, however, have been the same; the propulsive waves so induced can be partly inhibited by atropine-like drugs but not at all by some of the well known synthetic antispasmodics. Objective tests like those of Dr. Chapman throw doubt on the efficacy of many synthetic antispasmodics. Fortunately, some new substances such as dibutoline sulfate (dibutyl carbamate of dimethylethyl-beta-hydroxy-ethylammonium sulfate) look more promising.

Dr. William P. Chapman, Boston: Dr. Ingelfinger mentioned that possibly the fatigue of the bowel may be one reason for the decline in activity noticed with placebos. Another point is that the balloons during our observations moved down the bowel; therefore, one would ordinarily expect a decrease in activity. We do not know about the fatigue of the bowel. The whole matter of the physiology and the chemistry of smooth muscle contractility is a question mark, and I would not want to discuss that. As far as the movement of the balloons is concerned, we left one, the proximal balloon, in the stomach as an anchor while performing these studies. When we observed the patient at the end of the study, we would often see that the curve was taken up by the tube going around the greater curvature to the pylorus. It would become straightened out; therefore, we felt that there would be, at least with the balloons in the duodenum, a movement of 6 to 8 inches (15 to 20 cm.) in that area. As far as the tip balloon was concerned, we had no way of knowing just what part of the bowel was being studied, because of the tendency for the jejunum to sleeve up on the tube. We believe that this decline in activity, inasmuch as it was about the same in all the balloons in the duodenum and jejunum, probably was not too important a factor in explaining these changes.

As to the psychogenic factors, we tried to keep the patient as comfortable physically and mentally as could be. We asked how he was feeling at the end of the test. It is distressing to lie on one's back for several hours with a tube through the nose or throat. However, all subjects went through the same procedure when they had the placebos or the various drugs. We believe that the psychogenic and emotional factors were about the same in the control studies and with the various medications.

OCCUPATIONAL VIRUS HEPATITIS

An Apparent Hazard for Medical Personnel

CLIFFORD KUH, M.D., Dr.P.H.
Oakland, Calif.
and
WALTER E. WARD, M.D.
Berkeley, Calif.

It is well known that virus hepatitis has been accidentally transmitted to persons inoculated with materials containing untreated human serum, plasma or blood. The possible accidental transmission of virus hepatitis without direct inoculation is a more recent concept. If a physician accidentally inoculates himself with virus-containing blood in the process of treating a patient, he is practically in an equivalent position with the patient receiving such material. However, the illness of the physician which might result would be classified as occupational. It is possible that a similar occupational situation may exist among technical personnel who merely handle serum, plasma or blood. If such a situation does exist, thousands of persons throughout the world are potentially involved.

We are in a position to report 7 cases of apparent virus hepatitis which occurred among workers handling blood and its derivatives at Cutter Laboratories. All cases were provisionally considered industrial and have been handled as such. They occurred in two groups: 3 cases appeared in 1946-1947 and, after an interval of two years, 4 cases in 1949. During this entire period all personnel were carefully watched, so it is known that other clinical cases did not occur. The occupational origin of these illnesses was considered with the first case in 1946. Further inquiries at that time showed little, if any, information in this country on similar cases.

In spite of the significance of the possible acquisition of hepatitis through mere contact with blood, we have delayed reporting our cases because of doubt regarding the mode of transmission. We are also deeply concerned over the implications for physicians and other workers who may be handling human blood. A careful review of the literature, however, has revealed a number of pertinent references to apparent virus hepatitis among laboratory or clinical workers. These occupational illnesses have sometimes been spoken of as "spontaneous infections." While it is difficult at the present time to obtain complete information regarding the status of hepatitis among personnel in other laboratories, a general personal survey by one of us (W. E. W.) indicates that the occurrence of hepatitis in laboratory personnel handling blood is not uncommon in the United States. We wish to emphasize our belief that this problem needs further study to separate the occurrence of serum hepatitis from other causes of hepatitis.

TYPES OF VIRUS HEPATITIS

It is generally accepted that there is a naturally occurring infectious hepatitis and a homologous serum type which has been transmitted to man by the artificial, parenteral injection of virus-contaminated human serum. A simplified terminology has been suggested: virus hepatitis IH for the former and virus hepatitis SH for the latter. The two diseases are probably due either to different viruses or different strains of the same virus.[1] A distinguishing difference between them is the longer incubation period for virus hepatitis SH, but according to Aycock and Oren [2] this may be due to the admixture of the homologous serum virus with serum antibodies rather than to any inherent differences in the characteristics of the two viruses, although other studies justify the dual nomenclature.

Virus hepatitis SH has been transmitted experimentally to human volunteers through the parenteral injection of contaminated serum or blood.[3] There is some evidence, though scant, of its oropharyngeal transmission. Some writers [4] believe that patients with serum hepatitis have transmitted it to contacts, presumably through this route. However, there is no experimental support for the transmission of serum hepatitis in this manner. The well recognized accidental modes of acquiring the disease are: through infusion with infective individual or pooled blood or plasma; through parenteral injection with a vaccine contaminated by human serum, or, finally, by injection or venipuncture with an improperly sterilized syringe or needle.

Virus hepatitis IH is subject to both parenteral and oral routes of transmission, oral including the nasopharynx. Workers have verified transmission by these routes experimentally and in human volunteers [5]: the parenteral route by injecting infected serum or blood; the oropharyngeal route by feeding infected material, such as blood or feces, or by spraying it into the nasopharynx. Droplet infection into the conjunctival sac has also been suggested.

This brief review of modes of transmission may help to clarify the following references to occupationally transmitted hepatitis.

REVIEW OF LITERATURE

During the preparation of this article Leibowitz and others [6] reported an instance of virus hepatitis in a blood bank worker, who, they believed, contracted the disease as a result of accidentally pricking her finger with a needle or needles contaminated with blood containing the causative virus. Their case was also considered industrial and was industrially compensated.

In 1944 in an extensive treatise on postvaccination jaundice in American army personnel, Karl Meyer and his group [7] reported similarly that "a physician in England, who had been vaccinated against yellow fever six months previously with a nonicterogenic lot, pricked his finger with a syringe needle while taking blood from a patient suffering from postvaccination jaundice. He developed an attack of hepatitis four months after the accident."

From the Permanente Hospitals (Dr. Kuh) and Cutter Laboratories (Dr. Ward).

1. Neefe, J. R.: Recent Advances in the Knowledge of "Virus Hepatitis," M. Clin. North America **30**: 1407 (Nov.) 1946.

2. Aycock, W. L., and Oren, W. F.: Prolonged Incubation Period as Epidemiological Principle of Infectious Hepatitis and Homologous Serum Jaundice, Am. J. M. Sc. **214**: 483 (Nov.) 1947.

3. (*a*) Paul, J. R.; Havens, W. P., Jr.; Sabin, A. B., and Philip, C. B.: Transmission Experiments in Serum Jaundice and Infectious Hepatitis, J. A. M. A. **128**: 911 (July 28) 1945. (*b*) Neefe, J. R., and Stokes, J., Jr.: An Epidemic of Infectious Hepatitis Apparently Due to a Water Borne Agent: Epidemiologic Observations and Transmission Experiments in Human Volunteers, ibid. **128**: 1063 (Aug. 11) 1945. Havens, W. P., Jr.: The Etiology of Infectious Hepatitis, ibid. **134**: 653 (June 21) 1947.

4. (*a*) Propert, A. S.: Hepatitis After Prophylactic Serum, British M. J. **2**: 677 (Sept. 24) 1938. Neefe, J. R.; Stokes, J., Jr.; Reinhold, J. G., and Lukens, F. D. W.: Hepatitis Due to the Injection of Homologous Blood Products in Human Volunteers, J. Clin. Investigation **23**: 836 (Sept.) 1944. (*b*) Findlay, G. M.; Martin, N. H., and Mitchell, J. B.: Hepatitis After Yellow Fever Inoculation: Relation to Infective Hepatitis, Lancet **2**: 364 (Sept. 16) 1944.

5. (*a*) Findlay, G. M., and Martin, N. H.: Jaundice Following Yellow Fever Immunisation: Transmission by Intranasal Instillation, Lancet, **1**: 678 (May 29) 1943. (*b*) Footnote 3.

6. Leibowitz, S.; Greenwald, L.; Cohen, I., and Litwins, J.: Serum Hepatitis in a Blood Bank Worker, J. A. M. A. **140**: 1331 (Aug. 27) 1949.

7. Sawyer, W. A.; Meyer, K. F.; Eaton, M. D.; Bauer, J. H.; Putnam, P., and Schwentker, F. F.: Jaundice in Army Personnel in the Western Union of the United States: Its Relation to Vaccination Against Yellow Fever: Parts II, III and IV, Am. J. Hyg. **40**: 35-107 (July) 1944.

Meyer and his workers [7] also made the incidental but important report that "a technician, R. M. H., working in a military laboratory, in California, developed jaundice late in October 1942. She had not been vaccinated against yellow fever, but during the preceding five months she had done over 1,000 icterus index determinations on sera from patients suffering from postvaccination jaundice. It was learned that during the early part of August she had on two occasions accidentally sucked some of the serum into her mouth." This is the first known report of an apparent occupational case of virus hepatitis reputedly acquired orally.

Except for these reports by American authors all the other references to occupational hepatitis that we have read in the literature are by British writers, but the articles are scattered and, like the American reports, no one seems to have paid much attention to them.

The first British reference is that of Findlay, Dunlop and Brown,[8] who recorded in 1931 "what was apparently the spontaneous infection of a laboratory worker with infective hepatitis. 'The patient (the laboratory worker) had been handling serums from patients with infective hepatitis during an epidemic in Yorkshire. The incubation period of this case of 'laboratory infection' could not have been less than 34 or more than 41 days. If spontaneous infection did occur the agent most probably gained entrance through the nasopharynx."

The next British reference is a letter from the regular London correspondent of THE JOURNAL dated Jan. 23, 1943.[9] Reporting on "Infective Hepatitis in the War" and discussing also postinoculation jaundice, the correspondent said ". . . children and others passively immunized with mumps and measles convalescent serum have developed similar jaundice, which they have sometimes transmitted to contacts and laboratory workers handling serum from patients with the disease."

Again from London a year later, in an article to substantiate that hepatitis in patients being treated for venereal disease was not necessarily caused by the therapeutic arsenicals, Sheehan [10] wrote:

> Further evidence that NAB (neoarsphenamine) is not the significant factor (in causing the disease) comes from the incidence of hepatitis during a year in personnel handling the blood of syphilitic patients in a clinic where many of these patients were incubating hepatitis. Three orderlies, who had helped in the actual injections and frequently had their hands contaminated with blood from the patients, developed hepatitis, which was in no way distinguishable from hepatitis following NAB. Three laboratory assistants, who had the duty of separating serum from the blood of the patients for Kahn tests, also developed an identical hepatitis. These laboratory assistants worked in a different building from the VD treatment center and had no contact with the patients. None of these 6 cases had received any NAB injections, nor had they received any injections from unsterile syringes.

The author does not state whether or not there was contact between orderlies and the laboratory assistants, but we assume there was not. As in the Leibowitz and Meyer reports, Sheehan raised the question of contamination through cuts in the skin, for he concludes his paragraph with the statement, "The infection may possibly have passed through small accidental scratches on the skin of their hands." These references to occupational virus hepatitis in the literature are summarized in table 1.

TABLE 1.—*Summary of References to Occupational Virus Hepatitis*

Authorship	Date	Circumstances	No. of Cases	Accredited Mode of Accidental Transmission
Findlay and others [4b]	1931	Laboratory worker handling patients' serums	1	Nasopharynx
Reported by London correspondent of THE JOURNAL [9]	1943	Laboratory workers handling patients' serums	2 or more *	None stated
Sheehan [10]	1944	3 orderlies treating syphilitic patients and 3 laboratory workers doing Kahn tests	6	Accidental scratches on skin of hands
Sawyer, Meyer and others [7]	1944	English physician doing venipuncture	1	Accidental finger prick with needle of syringe
		American technician doing icteric indexes	1	Orally through sucking serum into pipet
Leibowitz and others [6]	1949	Blood bank worker	1	Accidental finger prick with needle of syringe

* As evidenced by use of plural term "laboratory workers."

POSSIBLE MODES OF TRANSMISSION IN OUR CASES

It would seem, then, well within the limits of probability that in any laboratory a worker who handles blood or its derivatives contaminated by the virus of human infectious hepatitis and who inadvertently gets some of this material on his hand and places his hand to his mouth might contract the disease. The infection might also be transmitted through already existing cuts or open wounds of the skin. Direct absorption through the intact skin might be considered a possible though improbable route. To rule it in or out would require experimental research, which apparently has never been attempted.

Another accidental route, the conjunctival sac, has been mentioned, but there is no experimental evidence in support of this mode of entry. Furthermore, from an occupational point of view the conjunctival route would offer no problems of epidemiology or prevention different from those of the oral route. American workers [3a] and one group of British authors [3a] have reported the successful experimental transmission of hepatitis through nasal washings. This method of transmission may be important in the present discussion because of the possible intranasal spread of the disease to workers handling dried or powdered blood derivatives.

A careful survey of workers handling human blood at Cutter Laboratories brings out no unusual hazard. The only additional hazard which does not occur in the usual hospital or clinic laboratory consists of handling dried plasma or dried blood derivatives. However, there is no indication that this is any greater hazard than the handling of whole blood itself. It should be emphasized at this point that plasma which is marketed as plasma is sterilized by ultraviolet rays. In other blood derivatives that leave Cutter Laboratories either the virus is known to be inactive in the end product or a final sterilization takes place. Consequently, hepatitis

8. Cited by Findlay, Martin and Mitchell.[4b]
9. Infective Hepatitis in the War, Foreign Letters, J. A. M. A. **121**: 878 (March 13) 1943.
10. Sheehan, H. L.: Epidemiology of Infective Hepatitis, Lancet **2**: 8 (July 1) 1944.

did not develop in any person who handled plasma exclusively or its fractions in final market containers.

As to possible modes of transmission in our cases, what we have to say is in the realm of conjecture, but some inferences may be drawn. Table 2 gives essential data concerning all 7 cases of hepatitis, including severity of the disease, the material to which the worker was exposed and the floor of the laboratory on which he worked at the time of illness. Several male workers exhibited cuts on their hands from handling heavy equipment, which may have been portals of entry. Obviously women at work in a supervisory capacity or doing research handle no heavy equipment, and no cuts were observed on their skin. At no place in the work routine are needles or sharp surgical instruments encountered. Contamination of the hands is possible when one handles plasma and other materials. Such operations might also serve to produce droplets containing organisms that could enter the body through the nasopharynx or even the conjunctival sac.

Several of the workers smoke on the premises but away from work, and contamination of the mouth from the hands might be possible. Although laboratory workers as a class are careful and presumably wash their hands at critical moments, lapses in technic are possible. Rubber gloves are now supplied to the workers.

After the blood has been through the desiccation room it is possible that the finely powdered fractions might contaminate the mouth and face of workers. In general, both parenteral and oropharyngeal routes of infection now appear to be possible in the workers' environment, although in the past it was scarcely dreamed that such avenues existed. The cases illustrate a truism: unsuspected hazards may exist in any environment.

Assuming that two different viruses or strains of virus are responsible for the disease, we can only guess with which we are dealing. Apparently either the IH or SH virus could be present in random blood specimens coming to a commercial laboratory.

Of course, worker to worker transmission in our cases cannot be categorically excluded. Against its occurrence is the dispersal of infected workers over a large work area on two floors of the building. No known cases have occurred in other departments or in the families of any of the infected workers.

If our cases were due to a carrier in the department we might expect more cases to have occurred. As it is, including turnover, approximately 1,200 persons have been employed handling blood products since this program was begun at Cutter Laboratories. Consequently, many have escaped the disease.

Against our cases being of the naturally occurring disease is the fact that the average number of cases of infectious hepatitis for the past five years in Berkeley, Oakland and Alameda County (whose respective populations during that time have averaged 100,000, 400,000 and 700,000) has been 5.0, 7.8 and 21.4, respectively. In other words, the 4 cases in 1949 at Cutter Laboratories in Berkeley, whose employment census is about 700, almost equal the average annual number of 5 cases in that city of 100,000 population. The case rate per 100,000 population in Oakland and Alameda County (2.0 and 3.1, respectively) is less than the rate of 5.0 in Berkeley, so further comparison of the incidence in these other localities with the incidence at Cutter Laboratories would be even more striking. These figures strongly suggest, despite the small number of cases involved, that the laboratory infections were related to some extraneous factor in the environment possibly associated with employment. Of course, unreported cases, if any, in the community would modify the data.

There is no evidence that the workers in the blood handling department had a greater sickness propensity than other Cutter Laboratory workers that might have made them, as a group, prone to hepatitis infections. In table 3 we indicate, for example, that the annual disability rate in the two and a half year period from January 1947 through June 1949 was essentially the same for workers in the blood handling department as for workers in the penicillin department. Except for 1 worker who had donated blood, none of our patients gave a history of recent inoculation or blood withdrawal.

TABLE 2.—*Data on 7 Cases of Virus Hepatitis in Workers Exposed to Blood and Its Derivatives*

Case *	Sex	Age at Time of Illness	Month of Onset	Jaundice	Duration of Illness	Hospitalized	Material to Which Worker Was Exposed	Floor of Laboratory
1	F	23	December 1946	Yes	6 wk.	No	Whole blood and plasma	2d
2	M	32	January 1947	Yes	2 wk.	No	Plasma and derivatives	2d
3	F	39	January 1947	Yes	6 wk.	No	Whole blood and plasma	2d
4	M	25	February 1949	Yes	6 mo.	Yes	Plasma and all derivatives	2d
5	F	23	March 1949	Yes	6 mo.	Yes	Plasma exclusively	1st
6	M	35	July 1949	Yes	6 mo.	Yes	Plasma and derivatives	1st and 2d
7	M	31	July 1949	Yes	2 mo.	Yes	Plasma and derivatives	1st and 2d

* Cases 1, 2 and 3 comprised the first outbreak; cases 4, 5, 6 and 7 the second outbreak.

CLINICAL MATERIAL

The hepatitis occurred in 3 women and 4 men, who varied in age from 23 to 39 years. Clinically these infections did not differ materially from other reported cases, but we are summarizing the observations in 3 of them in which treatment was given at the hospital with which one of us (C. K.) is associated.

TABLE 3.—*Days Lost from Sickness in Blood Handling Department Compared with Penicillin Department from January 1947 Through June 1949*

	Blood Handling	Penicillin
Total number of persons who worked	70	131
Total number of months worked	549*	1,599
Total number of days out for illness	287*	506
Days lost per employee	4.1*	4.5
Days lost per employee per year (disability rate)	1.6*	1.8

* Exclusive of hepatitis cases.

The presenting symptoms were variable. One patient was first seen for urticaria. He also complained of an upset stomach, stiff neck and diarrhea, which were thought to be on an allergic basis. He was seen again three weeks later, when his symptoms were right upper abdominal quadrant pain of two weeks' duration, feverishness in the evening, intolerance of fatty foods, anorexia, nausea and burning of the throat. He

had noted buff stools and amber urine. He gave no history of inoculations of any kind but stated there had been other cases of jaundice at the laboratory.

A second worker came to the outpatient department because of malaise, slight aching and stiffness of joints and slight nausea. There was no vomiting or diarrhea. A week previously he had two loose bowel movements of buff color and noted dark urine. For the past four days his wife had noted that his eyes were yellow. He had received no inoculations, but four months earlier blood had been withdrawn for donation.

The third employee complained of dizziness of five days' duration, constantly present and worse on sudden movement. Urine was noted to be dark at the onset of illness and to become progressively darker. There was anorexia without nausea or vomiting.

On physical examination two of the patients exhibited icterus of skin and scleras and an enlarged, tender liver. The third showed slight icterus of the scleras but no signs referable to the liver. All were hospitalized with a diagnosis of homologous serum hepatitis, probably of occupational origin.

In all 3 cases on admission results of blood cell counts, including differential count, Kline test and routine urinalysis were normal. The normal differential count tended to rule out infectious mononucleosis. Bile was present in the urine on admission but was not seen during the recovery phase. Urobilinogenuria was variable; in the sickest patient it was only slightly elevated, but in another the test remained positive throughout hospitalization at significantly high dilutions, varying between 1:40 and 1:60. Maximum icteric indexes in the 3 patients were 41.2, 83.1 and 101.0 units, and the degree of hyperbilirubinemia paralleled the severity of the illness.

Thymol turbidity rose to a level of 10 to 14 units in the mildly and moderately ill patients, then gradually subsided to normal. In the severest case it reached a maximum of 42 units, which corresponded practically with the height of the illness.

Prothrombin time was determined in the 2 more severely ill patients, in whom it dropped to as low as 16 per cent of normal in one and 30 per cent of normal in the other. Cephalin flocculation on admission was elevated in all 3 patients, namely, between 2 plus and 4 plus in twenty-four hours and either 3 plus or 4 plus in forty-eight hours. It gradually subsided to 1 plus or 2 plus. The albumin-globulin ratio showed slight reversal, except in the sickest patient, in whose case the serum albumin became as low as 3.0 Gm. and the globulin rose to 6.2 Gm. per hundred cubic centimeters of serum. The oral hippuric acid test was done in only 1 patient and showed a slight diminution in excretion. Plasma cholesterol was within normal limits in all cases, esters varying between 55 and 65 per cent. Sulfobromophthalein sodium retention was not determined until near the end of the illness, when it was elevated in all patients and as high as 30 in 1 of them; it tended toward normal in all 3 as convalescence progressed.

Spot roentgenograms of the gallbladder area did not reveal stones except in the mildest case, in which numerous large ones were revealed. However, it is believed that the stones played no role in the illness of the patient because of his relatively rapid recovery, absence of pain, and laboratory evidence of hepatitis.

The 3 patients were hospitalized from twenty-one to sixty days. Treatment comprised bed rest, a high protein, high carbohydrate and low fat diet, choline, vitamin supplements and symptomatic relief. In 1 patient aureomycin therapy was tried without any evident effect on the course of the disease. All patients were subsequently followed in the outpatient department. Convalescence as a rule was slow, the patient complaining chiefly of fatigue. Time off from work varied from two to six months. In a situation where workers are constantly exposed to a possible source of infection there are no clues as to the length of incubation period in these cases.

COMMENT

One might reasonably ask why, in view of the enormous amounts of human blood handled in hospitals, clinics and laboratories throughout the world, occupational cases of virus hepatitis seem so few and far between. Apparently many variables are involved in the transmission of the disease,[11] including the type, virulence and quantity of virus, its admixture with antibodies, the size of the infecting inoculum, the mode of transmission, the environment and the susceptibility of the host, the last-mentioned variable involving such factors as fatigue, age and the effect of various hepatotoxins. The element of infectiousness of individual or pooled blood may vary with the time of blood withdrawal in relation to onset of incubation or to the time elapsed after the fully developed disease has subsided. Then again, virus IH may be more effective in producing disease when transmitted orally than parenterally, whereas virus SH may be more effective parenterally. It is possible that an infection will take place only on the simultaneous occurrence of certain favorable conditions; this might explain the relative rarity of laboratory cases, as well as the lapse of two years between the two small outbreaks at Cutter Laboratories.

Another reason for scarcity of reports may be that sporadic cases are considered the naturally occurring disease. Cases without jaundice may have gone unrecognized. We ourselves might not have been aware of the occupational implications had we not been face to face with a number of cases from one work area. Differences in degree of exposure and in manufacturing technics, of which we are not aware, may also play a role.

PREVENTION

We believe that evidence at hand indicates that any worker in a laboratory handling blood for any purpose whatsoever, as in the common procedure of Wassermann or Kline testing, should avoid getting the blood on his hands. History taking to identify the blood of persons who have had hepatitis may avail little or not at all, because of the existence of subclinical cases or clinical cases without jaundice. A technician drawing blood from a person actually ill with virus hepatitis should consider the advisability of wearing gloves. In any event it is important to wash one's hands after exposure to human blood or blood products. Neefe[1] has suggested that all specimens of blood, urine and feces from a patient with virus hepatitis should be labeled infectious and handled cautiously.

Prophylactic treatment of exposed workers with periodic injections of immune globulin[12] is a measure now in use at Cutter Laboratories. Any person who knows that he has accidentally contaminated himself with potentially dangerous blood or serum might advisedly submit to an injection of immune globulin. Where dried fractions are produced in the process of manufacture, proper precautions should be employed to prevent workers from inhaling potentially infectious material.

At the present time experiments are being conducted to sterilize plasma through the use of nitrogen mustard.[13] One disadvantage of this treatment is that the prothrombin time is prolonged. Other chemicals have also been tried for this purpose. The value of ultraviolet rays for sterilizing blood fractions is controversial because of possible physicochemical alteration of the

11. Epidemic Hepatitis, or Catarrhal Jaundice, editorial, J. A. M. A. **123**: 636 (Nov. 6) 1943. Sapero, J. J., and Butler, F. A.: Highlights on Epidemic Diseases Occurring in Military Forces in the Early Phases of the War in the South Pacific, ibid. **127**: 502 (March 3) 1945. Brightman, I. J., and Korns, R. F.: Homologous Serum Jaundice in Recipients of Pooled Plasma, ibid. **135**: 268 (Oct. 4) 1947. Neefe.[1]

12. Stokes, J., Jr.; Blanchard, M.; Neefe, J. R.; Gellis, S. S., and Wade, G. R.: Methods of Protection Against Homologous Serum Hepatitis: I. Studies on the Protective Value of Gamma Globulin in Homologous Serum Hepatitis SH Virus, J. A. M. A. **138**: 336 (Oct. 2) 1948.

13. Hartman, F. W.; Mangun, G. H.; Feeley, N., and Jackson, E.: On the Chemical Sterilization of Blood and Blood Plasma, Proc. Soc. Exper. Biol. & Med. **70**: 248 (Feb.) 1949.

fractions, but their use for sterilizing plasma [14] is an accepted fact with wide commercial application.

The many measures advocated for protection of the person receiving an injection of blood, a blood derivative or vaccine are well recorded [15] and are not mentioned in this discussion, since we are dealing exclusively with the apparent occupational hazard to personnel in the medical and allied professions.

SUMMARY

A distinction is made between the accidental transmission of virus hepatitis to a person receiving an inoculation and the occupational hazard to the physician or other person giving the injection. A similar type of occupational hazard may exist for the worker in a laboratory in the mere act of handling contaminated blood or blood derivatives.

Seven cases are reported of virus hepatitis in laboratory employees who were presumably exposed to a source of infection at work. Pertinent literature on occupational hepatitis is reviewed, and possible modes of infection are discussed. Some of our patients may have become infected accidentally through the parenteral route, others through the oropharyngeal route. Methods of prevention are also indicated. An occupational hazard apparently exists for physicians, nurses, technicians and persons handling human blood in any laboratory, hospital or clinic.

PENICILLIN–SILVER NITRATE PROPHYLAXIS AGAINST GONORRHEAL OPHTHALMIA OF THE NEWBORN

Preliminary Report on Use of Penicillin and Silver Nitrate Combined and of Silver Nitrate Alone

SAMUEL G. WATTS, M.D.
and
MORRIS M. GLEICH, M.D.
New York

After Crede's [1] initial introduction of silver nitrate as a prophylaxis against ophthalmia neonatorum in 1881, the incidence of this disease and its complications in the newborn infant diminished markedly. This was especially true of gonococcic conjunctivitis. However, despite this significant reduction, neonatal gonorrheal ophthalmia continues to present a problem today, especially in populated areas where there is a high incidence of gonorrheal infection.

The persistence of this disease in particular has led to much criticism during recent years concerning the efficacy of the continued use of silver nitrate as a prophylactic agent. Extensive investigation is now under way in an effort to discover either an adequate substitute or a suitable supplement. With the advent of the newer bacteriostatic and antibiotic compounds, such as the sulfonamides and penicillin, this search has become more intensified.

In 1943 at Harlem Hospital, Gleich and his associate [2] introduced a simplified method of treatment of gonorrheal ophthalmia of the newborn by means of chemotherapy in the form of oral doses of sulfathiazole. They found that an average total dose of 14 grains (0.91 Gm.) of sulfathiazole was required to cure gonococcic conjunctivitis. The same authors [3] in 1944 demonstrated the prophylactic value of the combined oral administration of sulfathiazole and local application of silver nitrate against gonococcic conjunctivitis. In their series of cases a total of 1,425 newborn infants received the combined prophylaxis. Of this number gonorrheal infection developed in the eyes of 2, or 0.14 per cent. In a control group of 1,262 newborn infants who received silver nitrate but no sulfathiazole, 6, or 0.47 per cent, became infected. Thus gonococcic conjunctivitis occurred approximately three times as frequently in the control group as in the infants given sulfathiazole prophylactically (table 1).

TABLE 1.—*Incidence of Gonococcic Conjunctivitis in Infants Receiving Sulfathiazole Prophylactically and Infants Not Receiving the Drug (Feb. 1, 1943 to Feb. 1, 1944, Inclusive).*

	No. of Infants	No. with Gonococcic Conjunctivitis
Sulfathiazole given prophylactically..	1,425	2
No drug given.....	1,262	6
Total.....	2,687	8

In 1945, however, the routine use of the combined sulfathiazole–silver nitrate prophylaxis was discontinued at Harlem Hospital despite the apparently good results. The possibility of the subsequent development of sulfonamide-fast or resistant organisms precipitated such a course of action. The statistics during the next three years (1945, 1946 and 1947) proved noteworthy. The incidence of the disease during this period again became comparable to that in previous years, before the introduction of the combined method of prophylaxis. In 1945 there were 3 cases of gonorrheal ophthalmia among a total of 2,628 newborn infants. Of 2,916 infants in 1946, gonococcic conjunctivitis developed in 8. The total increased to 11 of 4,186 infants in 1947 (table 2). These figures clearly revealed the importance of the prophylactic value of combined chemotherapeutic agents and the apparent necessity for their continued use in controlling the incidence of gonorrheal ophthalmia. For these reasons the following investigation was undertaken.

TABLE 2.—*Gonorrheal Ophthalmia in Newborn Infants After Sulfathiazole–Silver Nitrate Prophylaxis Was Discontinued and Silver Nitrate Alone Employed (1945, 1946 and 1947).*

Year	No. of Infants	No. with Gonococcic Conjunctivitis
1945.....	2,628	3
1946.....	2,916	8
1947.....	4,186	11
Total.....	9,730	22

14. Blanchard, M. C.; Stokes, J., Jr.; Hampil, B.; Wade, B. R., and Spizizen, J.: Methods of Protection Against Homologous Serum Hepatitis. II. The Inactivation of Hepatitis Virus SH with Ultraviolet Rays, J. A. M. A. **138**: 341 (Oct. 2) 1948.

15. Rappaport, E. M.: Hepatitis Following Blood or Plasma Transfusion: Observations in 33 Cases, J. A. M. A. **128**: 932 (July 28) 1945. Scheinberg, I. H.; Kinney, T. D., and Janeway, C. A.: Homologous Serum Jaundice: A Problem in the Operation of Blood Banks, ibid. **134**: 841 (July 5) 1947. Syringe Transmitted Hepatitis, editorials, ibid. **139**: 278 (Sept. 22) 1945; **139**: 459 (Feb. 12) 1949. Neefe.[1]

From the Department of Pediatrics (Dr. Watts, resident pediatrician; Dr. Gleich, Director), Harlem Hospital.

Valuable assistance and helpful suggestions were rendered by the following in this study: Dr. S. Weintraub, head of the Pathology Department; Dr. H. Minsky, attending Ophthalmologist; Dr. Alvin Mason, clinical assistant; Mr. P. Steinberg, chief bacteriologist; Miss L. Pagan and Miss B. Phillips, historians of medical records, and Mrs. E. Griffith, typist.

1. Crede: Die Verhutung der Augenentzundung der Neugeborenen, Arch. f. Gynaek. **17**: 50, 1881; ibid. **18**: 367, 1881.

2. Blumberg, M., and Gleich, M.: The Simplified Treatment of Gonococcic Ophthalmia Neonatorum with Chemotherapy, J. A. M. A. **123**: 132 (Sept. 18) 1943.

3. Gleich, M.; Blumberg, M., and Mason, A.: Prophylactic Value of Sulfathiazole Against Neonatal Gonococcic Conjunctivitis, Am. J. Dis. Child. **31**: 162 (June) 1944.

METHOD

On June 1, 1948, a study was begun on newborn infants at Harlem Hospital in an effort to prove the value of the combined intramuscular administration of penicillin and local application of silver nitrate as a prophylaxis against gonorrheal ophthalmia. The routine instillation of silver nitrate into the conjunctival sacs of all newborn infants was supplemented by an intramuscular injection of penicilin. Silver nitrate (1 drop of 1 per cent solution in each eye) prophylaxis was carried out in the delivery room. On reaching the nursery, each infant was given an intramuscular injection (in the buttocks or the deltoid region) of 50,000 units of aqueous penicilin G (50,000 units dissolved in 1 cc. of distilled water).

Each infant was observed closely for the five to seven day hospital period. Any discharge from the eyes was smeared and cultured for three successive days, and the infants were immediately isolated. At the time of the mother's discharge from the hospital she was given explicit instructions to return with the infant to the pediatric emergency unit and the pediatric follow-up clinic should he have a discharge from the eyes after his release from the hospital.

TABLE 3.—*Gonorrheal Ophthalmia in Newborn Infants Receiving Intramuscular Injection of Penicillin Combined with Local Instillation of Silver Nitrate (June 1, 1948 to June 1, 1949).*

Year	No. of Infants	No. with Gonococcic Conjunctivitis
1948-1949	4,565	0

TABLE 4.—*Organisms Occurring on the Conjunctivas of Newborn Infants Receiving Penicillin-Silver Nitrate Prophylaxis (June 1, 1948, to June 1, 1949).*

Group Organisms	Cases	%
Gram-positive cocci	20	66.6+
Gram-positive rods	5	16.6+
Gram-negative rods	5	16.6+
Total	30	100

RESULTS

Between June 1, 1948 and June 1, 1949, a total of 4,565 newborn infants received the combined penicillin–silver nitrate prophylaxis. Not a single proved case of gonococcic conjunctivitis was observed (table 3).

However, in a few instances varying degrees of chemical irritation were noted after local instillation of silver nitrate. This was manifested by the development of a mild to profuse purulent discharge from one or both eyes, with or without associated redness and swelling of the eyelids. These reactions were evident in the first forty-eight hours of life and persisted for two to four days and in some instances for longer periods. Routine smears and cultures taken during this period revealed a variety of organism groups. In 30 cases gram-positive cocci predominated in the largest percentage while gram-positive and gram-negative rods constituted smaller percentages in comparison (table 4).

The persistence of these organisms, especially the gram-positive cocci group, despite the combined chemotherapeutic prophylaxis cannot be fully explained. Allen and Berrere [4] in a recent paper noted a higher occurrence of gram-positive organisms in silver nitrate–treated eyes than in penicillin–treated eyes. No particular explanation was given.

Included in our series of cases was 1 proved case of severe Hemophilus influenzae conjunctivitis treated successfully with sulfadiazine and streptomycin. No complications developed. In another instance a gram-negative Diplococcus belonging to the Neisseria group was cultured on routine examination. However, subcultures failed to identify this organism as N. gonorrhoeae. Repeated smears and cultures likewise proved fruitless. No cases of inclusion blennorrhea were identified in any infant during his period of hospitalization. Since the incubation period for this disease according to Gifford [5] is five to seven days after birth, it is possible that in some cases it might have developed after the infant's release from the hospital. It is likely that this did not occur with any great degree of frequency since such cases were not discovered on follow-up.

No serious sequelae were noted as a result of the intramuscular injection of penicillin.

COMMENT

With the discovery of penicillin, many investigations were undertaken in an effort to prove its effectiveness in the treatment of ocular complications. Thus, its value both locally and parenterally in the treatment of gonorrheal ophthalmia was shown. Griffey [6] in 1944 first employed intramuscular injection of penicillin successfully in the treatment of gonococcic conjunctivitis. McCulloch and Dyson [7] and later Lewis [8] used penicillin both locally and parenterally to good advantage in the treatment of gonorrheal ophthalmia.

In a preliminary report in 1947 Franklin [9] made a clinical comparison of penicillin and silver nitrate as a prophylaxis against ophthalmia neonatorum. As a result of this initial study, which was corroborated later by bacteriologic analyses, he stated that penicillin compared favorably with silver nitrate as a prophylactic agent. Penicillin prophylaxis, according to him, was preferred because of the following observations: (1) the reduced danger of permanent injury to the eyes (2) the nonpainful instillation and (3) the lessened incidence of other ocular complications during the first days of life.

Allen and Berrere [4] found penicillin to have no particular advantage over silver nitrate in the prophylaxis against gonorrheal ophthalmia. However, their conclusion was based on facts taken from a population in which there is a low incidence of gonorrheal infection in general. This, of course, made an adequate and true comparison impossible. They recommended similar controlled studies in a population in which a higher incidence of gonorrheal infection exists.

The results obtained from our study are indeed encouraging. Not only was the occurrence of gonorrheal ophthalmia apparently eliminated but the occurrence of other common neonatal complications appeared reduced to some extent.

SUMMARY

The incidence of gonorrheal ophthalmia in newborn infants at Harlem Hospital was appreciable before the use of combined oral administration of sulfathiazole and local instillation of silver nitrate prophylaxis. With

4. Allen, J. H., and Berrere, L. E.: Prophylaxis of Gonorrheal Ophthalmia of the Newborn, J. A. M. A. **141:** 522 (Oct. 22) 1949.

5. Gifford, S.: A Textbook of Ophthalmology, ed. 3, Philadelphia, W. B. Saunders Company, 1945, p. 121.

6. Griffey, W. P.: Penicillin in the Treatment of Gonorrheal Conjunctivitis, Arch. Ophth. **31:** 162 (Feb.) 1944.

7. McCulloch, R. J. P., and Dyson, C.: Gonococcal Conjunctivitis Treated with Penicillin, Canad. M. A. J. **52:** 284 (March) 1945.

8. Lewis, P. M.: Penicillin in Gonococcic Conjunctivitis: Its Use in 30 Cases Compared with the Sulfonamides in 173 Cases, Am. J. Ophth. **29:** 694 (June) 1946.

9. Franklin, H. C.: Prophylaxis Against Ocular Neonatorum, J. A. M. A. **134:** 23 (Aug. 9) 1947.

the institution of this combined chemotherapeutic prophylaxis, the incidence of gonococcic conjunctivitis was reduced considerably. After the discontinuance of this routine method of prophylaxis the incidence of gonorrheal infection in the eyes of newborn infants again became comparable to that in previous years. A study carried out for a period of one year (June 1, 1948 to June 1, 1949) demonstrated again the prophylactic value of combined chemotherapeutic agents (penicillin and silver nitrate) against neonatal gonococcic conjunctivitis. As a result of this investigation it is suggested that the combined intramuscular-local method of prophylaxis be continued until sufficient data are available for a more adequate evaluation.

HEALTH INSURANCE PLAN OF GREATER NEW YORK

The First Three Years

GEORGE BAEHR, M.D.
New York

After several years of nationwide study, a significant experiment in group practice under a voluntary prepayment plan, which was launched in New York in March 1947, is revealing an extraordinary amount of hitherto unavailable information concerning the utilization of medical services by a completely insured population.

ORGANIZATION

The Health Insurance Plan of Greater New York is a community-sponsored, voluntary medical care plan incorporated under the New York State Insurance Law as a nonprofit agency. It is not intended to be merely another medical insurance company. Its purpose is to provide comprehensive medical services to workers and their families through medical teams which assume full responsibility for medical care of the group in return for distribution of the premium income in the form of capitation payments. It was hoped that in this manner comprehensive medical care—preventive, early diagnostic and curative—could be provided on a sound financial and actuarial basis and without any restrictions or supplementary charges.

The Board of Directors of the Health Insurance Plan includes the mayor and high officials of the municipal government, the heads of two of the largest banks, important leaders of private industry, representatives of the Congress of Industrial Organizations and the American Federation of Labor and eight physicians selected for their professional or administrative experience, two of whom are the administrative heads of medical schools (Columbia University College of Physicians and Surgeons and Long Island College of Medicine). The determination of professional eligibility of participating medical groups and of standards for their professional services is the responsibility of a Medical Control Board comprised of medical members of the Board of Directors and representatives of the participating medical groups, the New York Academy of Medicine and two of the larger county medical societies (New York and Kings). Matters which concern the relationship of participating physicians to the Health Insurance Plan and its subscribers are cleared through a Joint Conference Committee consisting of four physicians who are elected by the participating groups, one from each major borough of the city, and four members of the Board of Directors, two of whom are physicians. The medical department of the plan is assisted by a division maintaining liaison between the physicians and the subscribers to facilitate the work of the medical groups. A Division of Research and Statistics constantly studies the utilization of services.

President and Medical Director, Health Insurance Plan of Greater New York.

INSURANCE COSTS

In order to enable the lower paid workers to subscribe to the plan, the employer is required to pay half the premium. Unless the employer paid at least half, the lowest paid workers could not afford the high annual premium required to provide comprehensive care of high quality for them and their families. Workers with low incomes also require an incentive to join, for few can appreciate the value of complete medical coverage until they begin to use the service.

Enrolment in the plan is open to groups of twenty-five or more persons having a common employer, if at least 75 per cent join; also to employed groups of ten to twenty-five persons if 90 per cent agree to join and include their dependents. Most subscribers to the plan have been enrolled in family units. Workers earning up to $5,000 a year and families with a total income which does not exceed $6,500 pay the base premium rate.

In the first three years of operation it was found that many industrial and business organizations would not join unless all their workers were eligible, and labor unions often would not agree to the exclusion of a small segment of the labor force because of a higher salary level. It was found that workers earning more than $5,000 constitute less than 5 per cent of the enrollable employees in these organizations. Accordingly, the rules were recently amended so that since Jan. 1, 1950 members of such employee groups whose wages are above $5,000 may also be enrolled if they pay a premium 50 per cent higher than the basic rate.

For employed groups which have the so-called "family contract," the basic premium rate for a member without dependents is $17 a year with an equal contribution by the employer, making a total of $34 a year.[1] Couples pay double and families of any size pay three times the single rate, the employer in each instance contributing an equal amount. An unmarried worker's payroll deduction for complete medical care therefore amounts to 33 cents a week; couples pay 66 cents a week, and families pay three times the individual rate, or about $1 a week, regardless of the size of the family. A family of fourteen pays the same premium as a family of three, which of course reduces the average return per enrollee to the plan. Payment to the medical groups for their services is not affected by the family size, for they are remunerated on a per capita basis. The medical groups receive $23.04 for each enrollee in the low income group and (since Jan. 1, 1950) $34.56 a year for each person earning above $5,000 and each member of an enrolled family whose total annual income exceeds $6,500.

A New York state law enacted in 1946 authorizes the City of New York to pay half the premiums for its employees who desire to enrol and for all dependent members of their families. Now in its fourth year of operation, the Health Insurance Plan is providing comprehensive medical care to more than 235,000 persons in their homes, at physicians' offices, at medical centers and in hospitals. In addition to employees of

1. When workers join under an "employee only" contract, the total annual premium is $29.

the City of New York, the insured include the employees of the United Nations and of one hundred and fifty-one other business and industrial firms, labor unions and social welfare agencies within the city.

MEDICAL GROUPS

The professional services are provided through twenty-eight medical groups situated in various parts of the city, each group having twenty-five or more members. The twenty-eight groups comprise 845 physicians, of whom 334 are general practitioners and 511 are internists, pediatricians and other specialists. The subscribers therefore have a wide selection of medical groups and of family physicians. To maintain a high level of service to subscribers and to open the plan to other physicians who desire to participate, additional medical groups are activated from time to time as enrolment increases.[2] In all groups, the chief of each of the twelve basic specialties must hold a certificate from an American specialty board or an appointment as attending or associate attending physician on the staff of a hospital approved by the respective specialty board for resident training in his specialty, or he must have equivalent qualifications.

The subscribers are entitled to general medical care, specialist and surgical care, preventive services, maternity and pediatric care, all diagnostic laboratory procedures, roentgen examinations and roentgen therapy, radium and radon treatment, physical therapy, administration of blood and plasma, and psychiatric advice and guidance but not prolonged treatment. They are also entitled to visiting nurse services in their homes and to ambulance transportation. No additional charge is made for any service except for night calls between 10 p. m. and 7 a. m., for which a fee of $2 may be collected by the medical group. Many of the groups ignore this unless there is abuse. All types of illness and disability are covered, including preexisting conditions. There are no physical examinations for admission and no age limits or waiting periods. The cost of hospitalization is covered by a separate Blue Cross or commercial hospital insurance contract, which all subscribers must carry.

Not included are treatment for drug addiction, acute alcoholism or chronic conditions, such as mental disease and tuberculosis, which require care in an institution other than a general hospital. Drugs, dentistry, prosthetic appliances, eyeglasses and purely cosmetic surgical measures are not covered. For exceptional procedures such as brain surgery, fenestration surgery for deafness and operations for congenital heart disease, the groups reinsure themselves through a special reserve fund, which engages some of the best surgeons in the city for the care of these patients and thereby relieves the groups of this unusual and unpredictable responsibility and expense. The cost of radium and radon is also paid from this central fund.

When a subscriber enrols, he selects one of the several medical groups serving the county or area in which he lives. He then selects one of the general physicians in the medical group as his personal or family physician, who in turn arranges for all necessary specialist or laboratory services.

The medical groups are individually organized as partnerships and are completely autonomous, except that they must possess the physical facilities and meet the organizational pattern and professional requirements of the Health Insurance Plan's Medical Board. The required physical standards vary with the number of subscribers enrolled in the groups; there are three categories, less than 5,000, between 5,000 and 10,000 and above 10,000. Three medical groups are serving more than 20,000 subscribers each, and one group serves about 26,000.

INCOME TO PHYSICIANS FROM THE PLAN

Under the present capitation rates, the plan is making monthly payments to its medical groups at a rate of over $5,520,000 a year for the care of its 235,000 subscribers, many of whom previously paid little or nothing for their medical care. Although still in its early promotional stage of development, costs of central administration are already down to less than 12 per cent; an additional 4 per cent of gross premium income is set aside for the legal reserve required by the State Insurance Department, and a similar amount is being withheld temporarily to cover indemnity for illnesses and accidents to subscribers away from home, for other possible contingencies and for amortization of the generous loans which were made at the outset by several philanthropic foundations to assist in establishment of the program.

A medical group on reaching its objective of 20,000 subscribers has a gross income of $460,000 a year, more if better paid workers among the enrolled employees join in the future at the higher premium rate. The medical groups, in accordance with their partnership arrangements, remunerate their members by an annual salary, after defraying their operational costs. In addition, almost all the groups have accumulated reserve funds during the past year with which they intend to improve their medical center and extend the scope of their services.

After all operating costs of a group are defrayed, the average net income of its physicians for full time service is at least $10,000 a year.[3] Since younger physicians of the medical group who are on probation and are not yet partners receive less and senior members substantially more, it is believed that this is reasonably adequate compensation for medical services rendered to persons of moderate income, many of whom formerly received free care at clinics and hospitals or were treated by physicians at reduced fees or as charity cases. One large group pays young physicians a starting salary of $7,500; when they become junior partners, after a year of trial, they receive $10,000; senior partners are remunerated at the rate of $17,000 to $18,000 for full time service. In addition to their income from the Health Insurance Plan, the physicians affiliated with the groups derive additional income from noninsured patients and from services rendered in compensation cases of veterans and workmen. If upper income subscribers enrol after Jan. 1, 1950 at the higher premium rate in the same proportion as they now exist in the currently enrolled employee groups (5 per cent), the average net income to physicians for full time service under the plan is expected to rise to about $12,250 a year.

Only one medical group is partly manned by full time physicians and specialists who do not engage in private practice. In all other medical groups, most of the participating physicians give part time to the plan and almost all engage in a variable amount of individual private practice.

2. Three new medical groups have been activated since January 1.

3. Full time service is defined as forty hours a week. This leaves sufficient time for additional private practice and for hospital or other extracurricular work.

ORGANIZATION AND EFFICIENCY OF GROUPS

Each medical group operates through a central administrative office and laboratory with a variable amount of office space for members of its staff. Eight groups have their basic clinical and laboratory services located in a complete health center, although many of the general physicians and some of the specialists in six of the eight (all but the New York University and Montefiore units) continue to see insured patients in private offices because these are located nearer the homes of their enrolled subscribers. In the remaining groups, the requirement of a complete health center to house the offices of the entire staff was waived temporarily because of low enrolment in the early days and because of the postwar shortages and high costs of building materials. All medical groups will now be required to meet the terms of their contract in regard to the establishment of a complete health center as soon as their subscriber enrolment reaches 10,000.

From the previous experiences of older groups in other parts of the country, it was estimated that twelve and a half full time physicians or an equivalent proportion of physicians on part time would be able to provide the medical services required by 10,000 persons, or one physician per 800 subscribers. This number has seemed to be adequate for most of the insured groups. Differences in the age-sex composition of a given group's enrolment, as well as the extra work necessary shortly after a new enrolment because of the backlog of previously unmet medical needs, are important factors in determining the required number of physicians, as is also the judicious use of auxiliary personnel, visiting nurses and optometrists to relieve the physicians of unnecessary labor.

It is already obvious that the caliber of work of the various medical groups is not uniform. The medical and research divisions of the Health Insurance Plan have recently completed a special survey of the staff operations and clinical services rendered by each of the twenty-six medical groups in operation before January 1, which revealed differences in performance. Four groups maintain the highest standards of service, nine other groups are not far behind, and there are gradations among the others. The groups are comprised of physicians and specialists who represent a good cross section of the reputable members of the medical profession of the city. It is our belief that a plan such as this, if it is to have broad application, should not depend too largely on medical groups at teaching hospitals, except that their professional work may be used to measure the performance of other groups. It must also be able to take an average sample of the physicians and specialists in the community and, by welding them together into a coherent medical group and gradually indoctrinating them with the ideals of modern preventive and curative medicine, enable them to provide medical care of better quality and of far broader social significance than they could as unsupervised physicians, practicing medicine in relative isolation.

The survey has disclosed deficiencies in all groups which would have gone undetected in ordinary private practice. Without any pressure from the Health Insurance Plan, revelation of these shortcomings to each medical group by the physician making the survey usually results in correction. The most effective means at the disposal of the Health Insurance Plan for elevating the standards of medical practice by all groups is to use the experiences of each group as yardsticks for measuring the performance of the others. The technic of making these comparative measurements of the professional performance of medical groups will be published shortly by Dr. Henry Makover of the staff.

A recent study of 1,015 consecutive obstetric deliveries during the period July 1, 1948 to June 30, 1949 revealed no maternal deaths. Surgical intervention (cesarian section) was required in 2.7 per cent of the deliveries, compared with 4.7 per cent for the city of New York generally; the neonatal mortality was 9 per 1,000 live births, compared with 20 per 1,000 for the city as a whole during this twelve month period. This favorable experience occurred in spite of the fact that under the Health Insurance Plan the proportion of primiparas and multiparas 35 to 39 years of age was twice that reported for the city of New York, the proportion of multiparas over 40 was double and of primiparas over 40 was four times that for the city. In a similar manner, the experience of the plan in a variety of other clinical fields, such as preventive medicine, pediatric services and cancer detection, is being used as a yardstick for measuring the general adequacy of its medical services and for determining their costs.

Fears that the availability of unlimited medical services would be abused by subscribers have proved to be unfounded. In fact, continued education of subscribers is required in some instances to encourage more adequate utilization of the available services, especially among trades whose workers are generally of a low educational level.

Approximately 500,000 physician services (exclusive of those of radiologists and pathologists), from a home or office visit to a major operation, have been required per 100,000 subscribers per year. This is less than was anticipated. Of these, about 56 per cent have been rendered by general physicians and 44 per cent by specialists. The combined services of the general physicians, internists and pediatricians accounted for 69 per cent of all services. It is particularly interesting that the recently completed survey revealed little evidence of excessive referral of patients to specialists. Several medical groups, among them the one with the largest enrolment, require all children to be cared for by pediatricians from the time of birth to 12 years of age and relieve the general physicians of this responsibility. In all groups, 98 per cent of all deliveries are performed by obstetricians.

Home calls constitute 12 per cent of all services. About 79 per cent of the medical services are rendered in the health centers of the groups or in the doctors' offices. Despite the Blue Cross incentive to hospitalization, laboratory services for hospitalized patients being paid in New York City by the Blue Cross and not by the Health Insurance Plan, one of the most surprising experiences has been that only 8.9 per cent of the total number of medical services have been rendered in hospitals. These statistics include every preoperative and postoperative visit to a hospitalized patient as well as the operative service itself, but not the services of radiologists or pathologists at either the group center or the hospital. The fact that 91 per cent of all medical services under a comprehensive prepayment plan are rendered outside of hospitals is a demonstration of the inadequacy of limited insurance coverage restricted solely to hospitalizable illness. It is an unanswerable argument in favor of coverage for comprehensive medical care.

In line with their present emphasis on preventive care, twenty-three of the medical groups of the Health Insur-

ance Plan distribute informational bulletins to their subscribers periodically. These contain preventive information appropriate to the season and also advice on how to obtain the maximum benefit from the service. Through this means, more adequate utilization by subscribers of the groups' facilities for disease prevention and early diagnosis is being stimulated. Some groups are offering educational lectures to their enrolled subscribers.

SUMMARY

It may be appropriate to emphasize that the Health Insurance Plan of Greater New York is voluntary and, after three years of operation, financially solvent. As an experiment in providing prepaid medical care through group practice, it is furnishing preventive as well as early diagnostic and curative services of truly comprehensive scope to an insured population of more than 235,000 persons without financial deterrents to full utilization of physicians' services. The deficiencies revealed during this first period relate to details in operation which can be corrected as experience with the plan grows. The first three years have not revealed any need for changing the basic concepts of the Health Insurance Plan of Greater New York.

425 Avenue of the Americas.

THE PROBLEM OF SPASM IN SKELETAL MUSCLE

A Clinical and Laboratory Study

ALEX HARELL, M.D.
SEDGWICK MEAD, M.D.
and
EMILY MUELLER, M.S., R.P.T.
St. Louis

The concept of skeletal muscle spasm is widely used despite the fact that a generally accepted definition of this term does not exist. Nevertheless, the clinical literature dealing with such diseases as poliomyelitis, arthritis, low back pain and many other conditions abounds with articles in which the term spasm is persistently used. It is commonplace on medical and orthopedic ward rounds and has even assumed medicolegal sanction. Such a commonly held concept ought to have a clear and concise pathophysiologic basis, easily understood and agreed on by all. Yet a search of the literature and especially of textbooks of physiology, neurology, orthopedics and medicine fails to reveal any but the vaguest explanations not only of the word spasm but even of the related concepts of tonus or tone.[1] To make matters worse, spasm is often confounded with rigidity, spasticity, spasms, contracture (histologic or physiologic) and cramp.

PURPOSE

This study was undertaken in an attempt to: (1) investigate the meaning of the spasm concept and formulate a definition sufficiently inclusive and generally acceptable; (2) discover simple means by which to demonstrate this condition objectively, and (3) determine whether there is by necessity a definite mutual cause and effect relationship between pain and spasm.

Formulation of Definition.—Several factors must be taken into consideration as a basis for formulating a definition of spasm. There seems to be one common aspect in the spasm theory, namely, that it is an involuntary response (reflex spasm) to noxious stimuli, arising in either the muscle itself or some structure associated with it.[2] These structures may have either the same common nerve supply or a common dermatomal, myotomal or sclerotomal connection. Thus muscle spasm must be caused by, initiated by or associated with impulses eventually transmitted to the muscle through its motor nerves (final common path). To state it differently, the existence or production of spasm requires all the components of at least a simple reflex arc. Thus, the peripheral manifestation of spasm does not differ basically from any other physiologic form of muscular contraction; as far as the muscle itself is concerned, it is normal contraction. According to current physiologic concepts, reflex or willed activity of skeletal muscle is associated with the production of propagated electrical potential changes called action or spike potentials,[3] similar to those produced by heart muscle and recorded by the electrocardiogram. Resting muscle is electrically silent.[4] Since neuromuscular activity is always associated with action potentials, the absence of such potentials is clearly indicative of the absence of muscular contraction and therefore, by definition, of spasm.

As a working basis we present the following tentative definition of spasm: Spasm in skeletal muscle is a reversible state of sustained, involuntary contraction, accompanied by muscular shortening and associated with electrical potential changes. This term should not be used unreservedly in conditions associated with well established organic lesions of the central nervous system.

Objective Demonstration of Spasm.—Numerous attempts have been made to evaluate the presence of spasm objectively. Sometimes an examiner is content to diagnose spasm whenever the patient says he feels muscular pain and is reluctant to permit movement to take place. Digital and mechanical palpation of hardened, raised muscle contours plus observation of muscle shortening are the most frequently used clinical criteria. Many types of mechanical apparatus involving the use of pistons, springs, weights and compressed air have been devised to determine the resistance of muscle to deforming stresses and have been rapidly discarded as inadequate. Friction, condition of the skin and subcutaneous tissue, as well as the alinement between the palpating instrument, the muscle and the underlying bony structure against which pressure is exerted—all influence the final result. Such methods utterly fail to differentiate between conditions such as spasm, voluntary contraction, passive shortening, contracture,

From the Division of Physical Medicine and the Department of Surgery, Washington University School of Medicine.

Drs. J. E. Erlanger, J. A. Key, A. S. Gilson and G. H. Bishop, Washington University School of Medicine, and Dr. R. S. Schwab, Massachusetts General Hospital, assisted in this study and provided laboratory facilities.

1. Bing, R.: translated and enlarged by W. Haymaker, from the German, ed. 5, Textbook of Nervous Diseases, St. Louis, C. V. Mosby Company, 1939. Wechsler, I. S.: A Textbook of Clinical Neurology, Philadelphia, W. B. Saunders Company, ed. 5, 1943. Purves-Stewart, J.: The Diagnosis of Nervous Diseases ed. 9, Baltimore, Williams & Wilkins Company, 1945.

2. Elliott, F. A.: Tender Muscles in Sciatica: Electromyographic Studies, Lancet **1**: 47-49, 1944. Travell, J.; Rinzler, S., and Herman, M.: Pain and Disability of the Shoulder and Arm, J. A. M. A. **120**: 417-422 (Oct. 10) 1942. Schlesinger, E. B.: Curare: A Review of Its Therapeutic Effects and Their Physiological Basis, Am. J. Med. **1**: 518-530, 1946.

3. Seyffarth, H.: The Behavior of Motor-Units in Voluntary Contraction: Skrifter utgitt av Det. Norske Videnskaps-Akademi i Oslo I. Mat.-Naturv. Klasse, Oslo, Jacob Dybwad, 1940. Howell, W. H.: Howell's Textbook of Physiology, edited by J. F. Fulton, ed. 15, Philadelphia, W. B. Saunders Company, 1946.

4. Hoefer, P. F. A.: Innervation and Tonus of Striated Muscle in Man, Arch. Neurol. & Psychiat. **46**: 947-971 (Dec.) 1941.

myxedema and fibrosis. Methods utilizing changes of resistance to stretch as an indication of spasm are similarly doomed to failure.[5]

For these reasons it was decided to use the most objective method available, namely, the evaluation by electromyography of electrical potential changes in the muscles involved. An electromyogram produced by muscle actively contracting for any reason, be it voluntary, reflex or artificial, will be basically similar. Therefore such a record does not give definite indication as to the cause or origin of these electrical potentials, differing in this respect from the electrocardiogram. Muscles shortened passively or shortened by contracture fibrosis, physiologic contracture[6] or other mechanisms not associated with central nervous activity do not produce such potentials. The detection, suitable amplification and recording as well as the proper interpretation of these bioelectric potentials constitute the art and science of electromyography.

PROCEDURES

All experiments were performed on human subjects, either patients or laboratory personnel. We acted as subjects for the most painful procedures. Most of the records were made using surface electrodes and Grass ink-writing oscillographs. Control experiments were carried out using needle electrodes and a Dumont cathode ray oscillograph to rule out errors in instrumentation.

CLINICAL OBSERVATIONS

Low Back Pain.—Forty-two patients with acute low back pain of diverse causation were studied. The term spasm is frequently used in connection with this condition. Many of these patients showed lists toward or away from the affected side. Indurated or elevated muscle contours could sometimes be palpated on the shortened, supposedly contracted side.

When electromyograms were taken from both sacrospinalis groups of the standing patient it was found that electrical activity existed on the convex side opposite the list and that the supposedly painful, contracted muscle on the concave side was actually electrically inactive (fig. 1).[7] This is a phenomenon of normal stance. Deviation from the vertical axis brings out a holding or antigravity activity opposite the direction of bending.[8] Such activity was not present when the patient was prone and the need for antigravity postural activity removed.

Fractures and Direct Trauma.—It is commonly accepted that the muscles around acute fracture sites are in a state of spasm.[9] The amount of force necessary to separate overriding bone ends is often cited as proof of this axiom. The muscles around the fracture site of 8 patients with acute major fractures of long bones were examined both with surface and needle electrodes. These muscles generally showed no evidence of spontaneous electrical activity, unless attempted active or passive motion of the affected area produced normal activity. Occasionally there appeared to be a state of inhibition: it may be difficult to get the patient to produce even a few action potentials by attempting voluntary movement of the painful part. Some freshly contused limbs were examined similarly, but again complete electrical inactivity was easily demonstrated.

Poliomyelitis.—Over 100 children and adults hospitalized at the St. Louis City Hospital with acute poliomyelitis during the 1949 epidemic were checked. Needle electrodes were used in all patients clinically suspected of spasm. Only in 2 boys did we find persisting electrical activity in the sacrospinalis groups which could not be abolished in any position. Both had pronounced opisthotonos. The electrical activity was sustained, indistinguishable from normal activity and more pronounced with the patient supine than prone. This observation is compatible with the existence of spasm. Neither patient complained of pain, either at rest or when moved. A careful examination of the remainder of the patients with acute poliomyelitis failed to reveal any objective evidence of spasm as manifested by spontaneous electrical activity during the first fourteen days of the disease. This agrees with the observations of Buchthal and Høncke,[10] whose

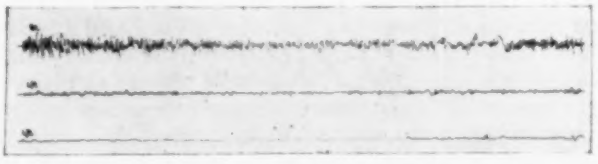


Fig. 1.—Electromyograms from right and left sacrospinalis, patient M. G. standing with list to left. Operation showed disk lesion at the fifth lumbar vertebra. Pronounced antigravity activity on the right (inkwriter-surface electrodes).

studies also showed that resting muscle in poliomyelitis is electrically quiet. This is true regardless of the degree of pain. Many of our patients manifested the commonly found resistance to passive stretching in some muscle groups. When these muscles were stretched without regard for pain, the well known cogwheel phenomenon associated with short bursts of electrical activity was observed. Once such joints were completely extended they maintained the extended position and pain disappeared, as did electrical activity. When the joint was flexed again this cycle could be fully repeated. Severe pain on stretching was repeatedly elicited in completely paralyzed muscles. This confirms observations by other investigators that such tightness and pain could not be influenced by full curarization.[11]

LABORATORY STUDIES

EFFECT OF EXPERIMENTALLY PRODUCED PAIN

Ischemic Pain.—The original experiment of ischemic pain was conducted in the early part of 1946 at the suggestion of Prof. Joseph Erlanger. The original Lewis technic[12] was followed: circulation to the arm

5. Spiegel, E. A.: Der Tonus der Skelettmuskulatur, Monographien aus dem Gesamtgebiete der Neurologie und Psychiatrie, no. 51, 1927.
6. Gasser, H. S.: Contracture of Skeletal Muscle, Physiol. Rev. **10:** 35-109, 1930.
7. Harell, A.: An Electromyographic Study of "Spasm" in Low Back Pain: Preliminary Report, read at the Twenty-Sixth Annual Session of the American Congress of Physical Medicine, Washington, D. C., Sept. 9, 1948.
8. Bevor, C., cited by Keith, A.: Menders of the Maimed, London, Oxford University Press, 1919, p. 123.
9. Watson-Jones, R.: Fractures and Other Bone and Joint Injuries, ed. 2, Baltimore, Williams & Wilkins Company, 1941. Magnuson, P. B., and Stack, J. K.: Fractures, ed. 5, Philadelphia, J. B. Lippincott Company, 1949.
10. Buchthal, F., and Høncke, P.: Electromyographical Examination of Patients Suffering from Poliomyelitis Ant. Ac. up to Six Months After the Acute Stage of the Disease, Acta med. Scandinav. **116:** 148-164, 1944.
11. Fox, M. J.: Curare in the Treatment of Acute Poliomyelitis, J. A. M. A. **131:** 278-280 (May 25) 1946. Rosenberg, D., and Fischer, A. E.: Curare (Intocostrin) in the Acute Stage of Anterior Poliomyelitis, Pediatrics **1:** 648-655, 1948.
12. Lewis, T., and Grant, R.: Observations upon Reactive Hyperemia in Man, Heart **12:** 73-120, 1925.

was occluded by a blood pressure cuff inflated to well above systolic pressure. Hyperventilation was avoided, and exercise of the forearm muscles was then continued until the pain became unbearable. The forearm muscles felt tender and tense, a condition simulating what clinicians call spasm. Yet with the subject properly positioned and relaxed the affected muscles showed

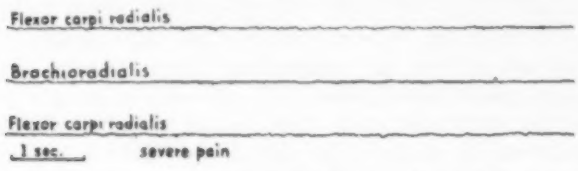


Fig. 2.—Electromyograms from wrist flexors, subject A. H., just prior to cuff deflation. Note absence of electrical action potentials despite severe pain in forearm muscles (inkwriter-surface electrodes).

no action potential activity (fig. 2).[13] Similar results were also obtained by Kugelberg,[14] who noted absence of electrical activity even after as long as thirty minutes of ischemia.

Hypertonic Sodium Chloride Solution.—Lewis and Kellgren [15] reported experiments describing the production of severe pain with associated reflex spasm by the injection of minute amounts of sterile 6 per cent sodium chloride solution into connective tissue. When 0.1 to 0.5 cc. of this solution is introduced into muscle a burning, tearing pain occurs which rises to a climax and subsides in about five minutes. Wolff and others [16] stated that injection of 6 per cent hypertonic sodium chloride solution into the temporalis muscle would produce spasm in the homolateral trapezius muscle. Electromyograms were offered in evidence. We injected 6 per cent hypertonic sodium chloride solution into the temporalis, trapezius, abductor digiti quinti, rectus femoris, hamstrings, gluteus maximus and lumbar sacrospinalis muscles, the sacrococcygeal and interspinous ligaments, sacral periosteum and the sacroiliac and hip joints of well controlled subjects. Hard, rounded lumps appeared sometimes after intramuscular injection of the solution. Electromyograms were obtained from these areas directly, in other cases from the area of pain reference. In cases in which the lumbar sacrospinalis was injected recordings were obtained simultaneously from the glutei and the hamstrings. None of these experiments showed electromyographic evidence of spasm. Similar injections in and around interspinous ligaments at various levels did not cause spasm in the homolateral rectus abdominis as claimed.[15]

Not content with observing the absence of spasm in positions of rest, we performed control experiments measuring the angle of straight leg raising at which action potentials appeared both before and after the pain due to injections of sodium chloride solution into the lumbar erector spinae. In no instance was there decrease in the angle during pain.

Extreme Cold.—A few experiments were carried out in which the forearm was immersed in water at 4 C. Early severe pain in the extremity was followed by refrigeration anesthesia of the immersed portion associated with a severe ascending ache in the arm to the level of the axilla. Electromyographic recordings from the muscles directly above the immersed forearm showed no evidence of electrical activity.

Mechanical Irritation of the Skin.—We produced pain mechanically by clamping a nutmeg grater to the forearm with a carpenter's C clamp. As soon as adaptation had occurred the pressure was increased in order to keep the pain at an approximately constant, severe level. The muscles in the immediate vicinity remained electrically quiescent.

Needle Insertion.—Insertion of needle electrodes into normal muscle usually is in itself a painful procedure. It is common to note bursts of injury potentials for a brief period. Spasm does not develop during reasonably long periods of observation, since electrical quiescence is observed here in the relaxed patient.

COMMENT

This paper is based on the premise that muscle spasm is a phenomenon of muscular contraction mediated through the central nervous system. Various types of stimuli are transmitted, by way of reflex arcs and their associated internuncial pools and the final common path, to the effector organ, in this case the muscle. Basically, then, skeletal muscle spasm is a form of sustained muscular contraction similar to active muscle contraction but of an involuntary nature. All muscle contraction initiated by nervous impulses is associated with the production of electrical action potentials; hence, the absence of such potentials in a muscle, even though it may appear to be shortened, thickened or more resistant to digital pressure, makes it clearly impossible for one to consider such a muscle in spasm. Electrical potentials can be recorded even during minimal contraction which is barely perceptible to the eye and which may not even produce noticeable muscular shortening.[17] This probably is the explanation for the frequently reported spontaneous or resting action potentials,[18] a term contradictory in itself. Conversely we know that states of contraction capable of producing obvious, visible postural changes are associated with an

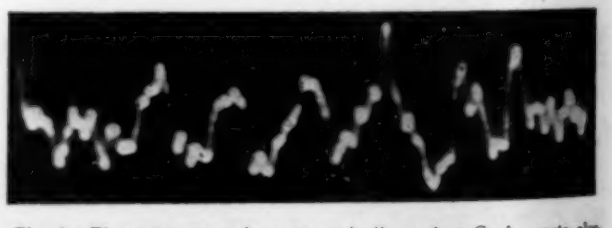


Fig. 3.—Electromyograms from sacrospinalis, patient G. A., acute clostridial tetanus following infected leg ulcer. Record shows that it is possible with our technic to pick up electrical activity, when present, from muscles in a state of prolonged involuntary contraction (cathode ray oscillograph-surface electrodes).

amount of potential changes readily detected with present day equipment and technics (fig. 3).

Normal muscle at rest does not produce action potentials. Or, to put it differently, the so-called resting tone or postural tonus is not caused by or associated

13. Mead, S., and Harell, A.: Failure of Experimental Pain to Produce Muscular Spasm: Preliminary Report, read at the Twenty-Sixth Annual Session of the American Congress of Physical Medicine, Washington, D. C., Sept. 9, 1948.

14. Kugelberg, E.: Injury Activity and Trigger Zones in Human Nerves, Brain **69**: 310-328, 1946.

15. Lewis, T., and Kellgren, J. H.: Observations Relating to Referred Pains, Viscero-Motor Reflexes and Other Associated Phenomena, Clin. Sc. **4**: 47-71, 1939.

16. Simons, D. J.; Day, E.; Goodell, H., and Wolff, H. G.: Experimental Studies on Headache: Muscles of the Scalp and Neck as Sources of Pain, A. Research Nerv. & Ment. Dis., Proc. **23**: 228-244, 1943.

17. Gilson, A. S., and Mills, W. B.: Activities of Single Motor Units in Man During Slight Voluntary Efforts, Am. J. Physiol. **133**: 658-669, 1941.

18. Denslow, J. S., and Hasset, C. C.: The Central Excitatory State Associated with Postural Abnormalities, J. Neurophysiol. **5**: 393-402, 1942. Watkins, A. L.; Brazier, M. A. B., and Schwab, R. S.: Concepts of Muscle Dysfunction in Poliomyelitis, J. A. M. A. **123**: 188-192 (Sept. 25) 1943.

with propagated action potentials.[4] Spasticity is caused by lesions in the central nervous system [19] and is characterized by a lowered threshold to stretch.[20] Even in spasticity the muscles are capable of being fully relaxed and usually are so unless the patient is disturbed or attempts active motion. They do not show electrical activity at rest but do produce definite action potentials when disturbed or active.[21] Muscle in spasm can be differentiated from muscle in either normal or spastic states by the fact that, among other criteria, even when optimum positioning and relaxation are attained spike potentials are still present. Another condition which can be confused with spasm is rigidity, which is generally assumed to be due to specific lesions of the central nervous system. In rigidity definite electrical activity can be elicited easily from the muscles while in a shortened state.[22] Such lesions of the central nervous system would not be expected in patients suffering from a painful back, fractured bone or painful joint in whom apparent muscular shortening does not produce such activity. We have not been concerned with the presence or absence of fibrillation potentials, since it is commonly agreed that these are a sign of denervation [23] and we consider that denervated muscle obviously cannot be in spasm, as has been claimed.[24]

We are fully aware of the technical difficulties as well as the pitfalls of interpretation inherent in electromyography. To avoid controversy over points such as selection of electrodes and apparatus, almost every known type was used. Electrodes have included solder pellets taped on over electrode paste, plaster of paris and clay mixtures,[25] single enameled steel needles with bared tips and Bronk type coaxial needles. Ink-writing oscillographs designed primarily for the slower frequencies of electroencephalography and electrocardiography have definite limitations in electromyography; therefore the performance of these instruments was frequently monitored by cathode ray oscillographs.

Not much attention was paid to potential size or shape in the evaluation of the records, but emphasis was placed essentially on the presence or absence of electrical activity as such, since it is well known that variations in spatial relationship of electrodes, interelectrode resistance, capacitances and impedences, as well as the type of electrodes, influence potential size and shape. For these reasons one cannot get comparative values from day to day, patient to patient or even muscle to muscle.

Common clinical opinion and a few papers on electromyography which do not clearly define the subject consider spasm a widespread phenomenon. Those who repeat these experiments should consider carefully that action potentials from muscles suspected of being in spasm may result not from spasm but from poor relaxation or positioning. Posture and position of a joint not only is maintained by the muscles acting directly on a given area but depends on fixation of this joint or extremity in relation to the whole body. It is not enough to try to relax and position only the area to be examined; one must be certain to avoid interfering synergistic muscle activity caused by unsuspected postural mechanisms. This has apparently not been considered carefully enough in many records of so-called spontaneous electrical activity, especially from areas of the body closely associated with basic postural maintenance or facial expression. Extrinsic or mechanophysical errors are also innumerable. A quiescent record obtained under carefully controlled conditions with known suitably sensitive and properly operating equipment seems to be more significant than activity, which may on careful investigation prove to consist mainly of transmitted activity or artefacts.[26]

It is not always easy to demonstrate electrical quiesence, especially in high-strung and apprehensive patients or those in severe pain. With improvement of our technic and by instructing the patients to watch the recording mechanism, guiding themselves by its activity, we succeeded in obtaining proper states of both physical and mental relaxation. Also, we did not continue experiments over too prolonged periods and thus we avoided production of fatigue, irritability and resentment on the part of the subject, all of which can lead to low grade muscular tension. This was especially important in the patients with backache.

In our consideration of the cause of lateral lists in the patient with a lame back, we have no experimental data to explain why or how the position of deformity is originally assumed. However, it can be stated definitely that once assumed it is not maintained by an active state of contraction of the axial skeletal musculature either of the back or abdomen on the shortened side. The muscular shortening and resistance to stretch often seen in overriding fractures and dislocations may be analogous to the shortening or retraction following tenotomy, possibly being of a physical nature. The contractures or deformities in rheumatoid arthritis and in related conditions may easily be explained on the basis of soft tissue changes (histologic contracture). A more detailed study of this subject is in progress.

As far as poliomyelitis is concerned, the distribution of the lesions in higher centers in addition to those of the cord is too diffuse to permit any generalization. Recent work by Bodian [27] showed that in some instances areas of the central nervous system generally associated with the production of spasticity are involved. It is conceivable that suitably located lesions may likewise produce muscle spasm in an occasional case, as seen in 2 of our patients. Nevertheless we agree with Pollock and associates [28] that spasm, at least as we have

19. Magoun, H. W., and Rhines, R.: Spasticity, the Stretch-Reflex and Extrapyramidal Systems, Springfield, Ill., Charles C Thomas, Publisher, 1948.

20. Lindsley, D. B.; Schreiner, L. H., and Magoun, H. W.: An Electromyographic Study of Spasticity, J. Neurophysiol. **12**: 197-205, 1949.

21. Hoefer, P. F. A., and Putman, T. J.: Action Potentials of Muscles in "Spastic" Conditions, Arch. Neurol. & Psychiat. **43**: 1-22 (Jan.) 1940.

22. Hoefer, P. F. A.: Innervation in the Dyskinesias, A. Research Nerv. & Ment. Dis., Proc. **21**: 502-528, 1941.

23. Denny-Brown, D., and Pennybacker, J. B.: Fibrillation and Fasciculation in Voluntary Muscle, Brain **61**: 311-334, 1938.

24. Pohl, J. F., and Kenny, E.: The Kenny Concept of Infantile Paralysis and Its Treatment, Minneapolis, Bruce Publishing Company, 1941. Kabat, H., and Knapp, M. E.: The Mechanism of Muscle Spasm in Poliomyelitis, J. Pediat. **24**: 123-137, 1944.

25. Developed by Dr. George H. Bishop, Department of Neurophysiology, Washington University Medical School.

26. Schwartz, R. P.; Heath, A. L., and Hudson, F. W.: Instrumentation in Relation to Electromyography, Arch. Phys. Med. **30**: 383-400 (June) 1949. Instruction Manual for the Grass Electroencephalograph, Quincy, Mass., Grass Instrument Company, 1948, Chap. H. Denny-Brown, D.: Interpretation of the Electromyogram, Arch. Neurol. & Psychiat. **61**: 99-128 (Feb.) 1949.

27. Bodian, D.: Experimental Evidence on the Cerebral Origin of Muscle Spasticity in Acute Poliomyelitis, Proc. Soc. Exper. Biol. & Med. **61**: 170-175, 1946.

28. Pollock, L. J., and others: Absence of Spasm During Onset of Paralysis in Acute Anterior Poliomyelitis, Arch. Neurol. & Psychiat. **61**: 288-296 (March) 1949.

defined it, is seldom found in this condition. The discussions and records shown commonly in studies on spasm in poliomyelitis [29] describe a phenomenon quite different from what would be expected according to general interpretation of the spasm concept. These authors, discussing spasm, describe brief, transitory states of muscular contraction associated with short bursts of electrical potential activity elicited only by passive stretching. True spasm, however, is characterized by sustained muscular contraction.

We have been unable to produce any sustained muscular contraction or spasm by the application of painful peripheral irritants. Sustained contraction or spasm was not found commonly or even occasionally in association with spontaneous somatic pain. These facts seem to be exceedingly important in the evaluation of the so-called pain–spasm complex.

SUMMARY AND CONCLUSION

1. Spasm in skeletal muscle is a reversible state of sustained involuntary contraction accompanied with muscular shortening and associated with electrical potential changes.

2. Groups of patients with various types of low back pain, fractures and poliomyelitis have been examined carefully for the existence of muscular spasm, using electromyographic technics. Only in an inconsequentially small number could such spasm be detected. It is believed that the clinical diagnosis of spasm in peripheral conditions such as backache, fracture or poliomyelitis will be erroneous in a large percentage of cases.

3. Clinical and experimental work is described which shows that there seems to be no specific cause and effect relationship between spasm and painful peripheral states.

4. A strong plea is made for thoughtful use of the term spasm, differentiating it carefully from spasms, spasticity, tonus, contracture, cramp and rigidity.

29. Schwartz, R. P., and Bouman, H. D.: Muscle Spasm in the Acute State of Infantile Paralysis, J. A. M. A. **119**: 923-926 (July 18) 1942. Kabat, H., and Knapp, M. E.: The Mechanism of Muscle Spasm in Poliomyelitis, J. Pediat. **24**:123-137, 1944. Schwartz, R. P.; Bouman, H. D., and Smith, W. K.: The Significance of Muscle Spasm in the Acute Stage of Infantile Paralysis Based on Action Current Records, J. A. M. A. **126**: 695-702 (Nov. 11) 1944. Brazier, M. A. B.; Watkins, A. L., and Schwab, R. S.: Electromyographic Studies of Muscle Dysfunction in Infectious Polyneuritis and Poliomyelitis, N. England J. Med. **230**: 185-189, 1944.

Pruritus in Hodgkin's Disease.—In December 1948, while administering adenylic acid to a small group of patients suffering from Hodgkin's disease in the hope that this substance might possibly improve their general physical condition, we noted that the only two patients having pruritus experienced an abrupt cessation of this symptom. Since then, study of the effect of adenylic acid administration has been extended to other Hodgkin's-disease patients with pruritus and to patients suffering from pruritus of diverse etiologies. In general, the results have been so gratifying that we wish at this time to report the observations made while treating the patients with Hodgkin's disease and to add to this report a brief account of the effects of this therapy on another group of patients suffering from diseases other than Hodgkin's disease. Findings pertaining to the second group are, we feel, pertinent because the results in both groups have been sufficiently similar to suggest the operation of a fundamental mechanism linked to adenylic acid metabolism. The substance used for our study was the sodium salt of muscle adenylic acid, administered in sterile solution.—Antonio Rottino, Effect of Adenylic Acid Therapy upon Pruritus Due to Hodgkin's and Other Diseases, *Cancer*, March 1950.

Special Article

VALUE OF THE ELECTROCARDIOGRAM IN CLINICAL PRACTICE

J. BAILEY CARTER, M.D.
Chicago

(Concluded from page 549)

The irregularities of the heart often confound the physician. The electrocardiogram is the final court of authority in all cardiac irregularities. The normal sinus mechanism varies from 60 to 100 beats per minute. Sinus bradycardia occurs with a rate below 60 per minute. Tachycardia denotes a rate above 100 per minute. Most sinus rhythms (with P waves alike in each lead and P-R intervals 0.10 to 0.20 second in duration) occur in normal hearts. The bradycardia of myxedema and beriberi and the tachycardia of heart failure are exceptions. Bradycardia with a normal heart may be due to effect of digitalis, jaundice, brain tumor or meningitis, tumor of the neck or mediastinum, pressure on the eyeball or massage of the carotid sinus. Tachycardia with a normal heart may be caused by exertion, excitement, use of coffee, tea, alcohol, tobacco, or food, pain, medication with atropine, epinephrine or the nitrites, thyrotoxicosis or neurocirculatory asthenia. It may be of emotional or psychogenic origin. Cardiac irregularities are most often due to sinus arrhythmia, extrasystoles or auricular fibrillation; less frequently, to paroxysmal tachycardia, blocks, flutter or auriculoventricular dissociation. An arrhythmia that disappears with increase in heart rate from exercise, effect of nitrites or atropine or other cause is usually of sinus origin and benign. Reassurance is a valuable therapeutic aid. Inequality of regular or irregular heart beats may be due to pulsus bigeminus, pulsus paradoxus or pulsus alternans.

SINUS ARRHYTHMIA

Sinus arrhythmia represents the simplest disturbance of cardiac rhythm. It is usually physiologic, a simple waxing and waning of the heart rate with the phases of respiration, due to variations in the activity of the pacemaker caused by alterations in vagal tone. It is common in children and young adults. If it is pronounced or unrelated to respiration it may be abnormal; effects of digitalis, old age or an unknown factor may be responsible. Each heart beat is from the normal pacemaker, and the individual waves and sequence of chamber contractions are normal throughout the electrocardiogram. There is an irregular disposition of beats—a variation in the length of the interval between individual cardiac cycles, i. e., a variation in the length of the T-P intervals.

Sinus arrest (standstill) is a dropped beat, the result of asystole. No P wave occurs for an interval equal to that comprising two normal beats. Rarely two or three beats may be omitted. Asystole may occur reflexly from carotid sinus pressure, excess digitalis or quinidine. Sinus standstill is due to absence (failure) of impulse initiation. It is a less frequent cause of death than ventricular fibrillation. It may occur accidentally, in a normal heart, from electrocution or during

---

The numbering of footnotes and illustrations is a continuation of that in the Special Article on the Value of the Electrocardiogram in Clinical Practice, which appeared in the June 10 issue of THE JOURNAL.

Assistant (Rush) Professor, Department of Medicine, University of Illinois College of Medicine.

Illustrations are from Carter, J. B.: The Fundamentals of Electrocardiographic Interpretation, ed. 3, Springfield, Ill., Charles C Thomas, Publisher, to be published.

surgical intervention or spontaneously (terminal) in a diseased heart. In sinoauricular block an impulse is initiated by the pacemaker but is prevented from reaching the auricles. These should not be confused with dropped beats due to auriculoventricular block, in which a P wave occurs during the long interval.

SHIFTING PACEMAKER

An ectopic focus may vary from one level to another (head to tail) within the sinus node. The P waves are upright and vary slightly in height, contour and duration. The P-R interval is above 0.10 second in duration. The ectopic focus may wander from one level to another between the sinoauricular and auriculoventricular node (fig. 8). The P waves, if seen, vary in polarity and contour. The P-R interval is below 0.10 second in duration in some cycles. Shifting pacemaker occurs in normal hearts as the result of neurogenic factors via the vagi.

SAFETY MECHANISMS OF THE HEART

Nodal escape occurs if the rate of normal impulse initiation is inadequate or if the impulse fails to reach the ventricles (fig. 9). An ectopic (junctional) pacemaker assumes control for one or more beats. Interference is responsible. In escape the heart is under the control of two pacemakers, i. e., impulses from the

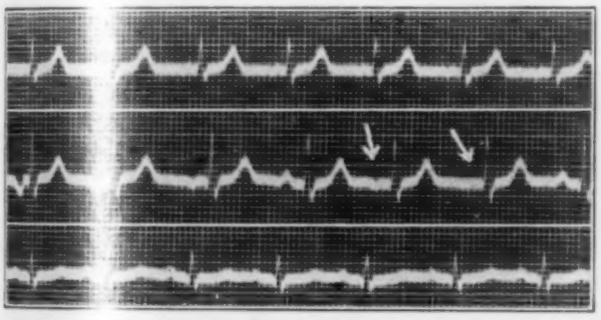


Fig 8.—Shifting pacemaker from the sinoauricular to the arterioventricular node. Note the variation in contour of P waves and in duration of P-R intervals.

sinoauricular and auriculoventricular node meet and obliterate each other. A QRS complex occurs after a long pause. It is usually of normal contour but may be slightly abnormal as the result of aberrant (abnormal) ventricular conduction. Either a P wave does not precede the QRS complex or, if it does, it is of normal contour with the P-R interval less than 0.10 second in duration. Dissociation (auriculoventricular) occurs when a series of nodal escapes, because of continued interference, prevents the transmission of normal impulses to the ventricles. The unidirectional block of the junctional tissue which permits an impulse to pass to the ventricles but not to the auricles assists this process. In nodal rhythm the sinoauricular node loses control and the auriculoventricular node becomes the pacemaker. Upper nodal rhythm is common (fig. 10). Lower nodal rhythm is rare (fig. 11). Heart beats occur regularly at a rate of 35 to 50 per minute. A retrograde small upright P wave in lead 1 and inverted P waves in leads 2 and 3 with the P-R interval less than 0.10 second in duration occur. Rarely, in coronary nodal rhythm a normal P wave with short P-R interval is seen, the pacemaker being near the ventricles. In the (rare) bundle of Kent syndrome[8] the P-R interval is short because a normal impulse partially bypasses the auriculoventricular node. An inverted P wave occurs in the S-T interval of lower nodal rhythm. The P wave may be absent (buried in QRS complex) in middle nodal rhythm. Nodal rhythm is most often the result of excess digitalis. It is abolished by atropine. Persistent nodal rhythm is often due to coronary disease. Nodal rhythm and tachycardia may be confused with paroxysmal nodal tachycardia, in which the rate may be as low as 100 per minute. Infrequently, an ectopic ventricular focus leads to the development of an idioventricular rhythm. These adjustments illustrate safety mechanisms inherent within the heart, each of which, in turn, can initiate impulses after depression or blocking of higher pacemakers. Reentry and parasystole are hypothetic mechanisms assumed to be responsible for certain unusual arrhythmias including auricular flutter and fibrillation. An unabridged textbook or the literature should be consulted.

AURICULAR EXTRASYSTOLES

In auricular extrasystoles the impulse arises from an ectopic auricular focus[9] and spreads to the ventricle, usually giving rise to a normal QRS complex and T wave (fig. 12). The complex may be aberrant or absent if the impulse from the ectopic focus is blocked by a refractory auriculoventricular node, the P wave being of abnormal contour in contrast to the normal P wave of heart block. The P wave may be upright, diphasic or inverted, depending on whether the ectopic focus is in, near or remote from the sinoauricular node. The pause after an auricular extrasystole is not compensatory; hence, the fundamental rhythm is disturbed.

NODAL EXTRASYSTOLES

If a QRS complex of normal contour and duration appears prematurely and is immediately preceded or followed by a P wave, either inverted or upright, it represents an auriculoventricular nodal (junctional) premature beat (fig. 13). If the focus of origin is high in the node a retrograde P wave occurs and the P-R interval is short. If auricles and ventricles contract simultaneously (focus midway in node) a P wave is not seen because it is superimposed on the QRS complex. If the ectopic focus is low in the node the P wave falls on the descending limb of the QRS complex or just after its completion, i. e., during the S-T interval. Nodal extrasystole is followed by a compensatory pause.

VENTRICULAR EXTRASYSTOLES

Ventricular extrasystoles constitute the commonest cardiac arrhythmia; they are responsible for most cases of "intermittence" (fig. 14). The ectopic focus may be anywhere in the ventricles, to which the arrythmia is limited. This results in the extrasystole being followed by a compensatory pause, i. e., the sum of the short interval preceding and the long interval following the extrasystole (the interval between the two normal beats on each side of the extrasystole) is equal to the interval between two normal cardiac cycles. The maintenance of a dominant rhythm is made possible by this compensatory pause and the sinus rhythm is undisturbed No P wave precedes the deformed (bizarre) QRS complex. The QRS complex is diphasic, slurred, notched, of high amplitude and of increased duration. If the ectopic focus is near the normal conduction pathways the QRS complex may be only slightly deformed. If the focus is remote, the complex is more decidedly abnormal. The T wave is large, often peaked and always opposite in direction to the chief deflection of the QRS complex. Determination of the ventricle of origin

9. Prinzmetal, M., and others: Mechanism of the Auricular Arrhythmias, Circulation 1: 241, 1950.

is of academic rather than clinical interest. It is of greater clinical importance to determine whether the extrasystoles arise from a single focus or from multiple foci in one or both ventricles. Multiple ventricular extrasystoles often initiate paroxysms of ventricular tachycardia. Rarely, a ventricular or nodal (not auricular) extrasystole may be interpolated between two normal beats. The premature beat here becomes a true extrasystole.

PAROXYSMAL TACHYCARDIA

In paroxysmal tachycardia there is a regular series of extrasystoles (ectopic beats) originating in the auricles, junctional tissues or ventricles. A paroxysm is of sudden onset and offset.

Auricular Tachycardia.—The common, benign, auricular form of tachycardia occurs in youth and may recur for weeks, month or years[9] (fig. 15). It consists of a continuous series of auricular extrasystoles at a rate of 120 to 220 per minute. The P waves are upright to diphasic and are often superimposed on the preceding T wave. Attacks are best terminated reflexly via the vagi, by deep breathing, holding the breath, bending forward, lifting the arms up and over the back of chair or car seat, swallowing (bolus of food), vomiting (apomorphine), pressure on the supraorbital nerve over one or both closed eyes or pressure and massage over the carotid sinus. Morphine, equinidine or methacholine may be given the patient. Digitalis is less effective in controlling the arrhythmia. It is used only for the heart failure that may result.

Nodal Tachycardia.—Nodal tachycardia is due to excessive irritability of the junctional tissues. It is intermediate as compared to the benign (auricle) and malignant (ventricular) forms. Prognosis depends on the extent of the associated cardiac change (fig. 16). As in nodal extrasystoles there are three types. A QRS complex, of supraventricular contour, may be followed (in the S-T interval) or just preceded (short P-R interval) by a P wave as the first beat of a paroxysm; the P wave is buried in the QRS complex if it is of midnodal origin. Often nodal and auricular tachycardia are distinguished with difficulty. In this instance the diagnosis of supraventricular tachycardia is made. The presence or absence of upright or inverted P waves with P-R intervals above or below 0.10 second in duration often determines the location of the ectopic focus in auricles or the auriculoventricular node; a P wave in the S-T interval clearly indicates its nodal origin.

Ventricular Tachycardia.—Paroxysmal ventricular tachycardia is a serious clinical disorder[10] (fig. 17). Fortunately, it is seldom observed except in serious organic heart disease Vagal stimulation has no effect on the tachycardia. The drug of choice is quinidine. A paroxysm is initiated in runs of one to five ventricular extrasystoles, from which the QRS waves of the tachycardia take their general contour. They are usually of high amplitude and follow each other in rapid succession with or without normal or retrograde auricular response. Ventricular tachycardia may be associated with auricular fibrillation or flutter.

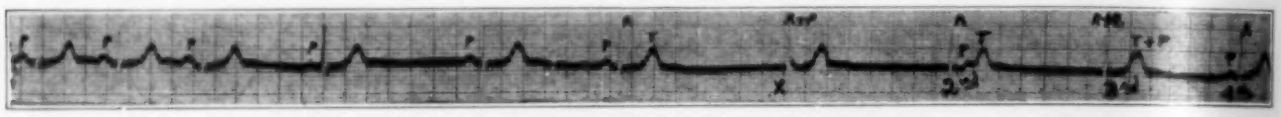


Fig. 9.—Escape. The curve shows sinus slowing of the heart. Escape of auriculoventricular nodal origin occurs at *x*. The pause preceding *x* is so long that the auriculoventricular nodal irritability cannot tolerate it; hence, the beat at *x* occurs before the sinus impulse arrives, beginning just before the peak of the delayed P wave. The P wave is superimposed on the lower portion of the S wave. The second nodal beat has a P wave midway between the S and T waves. The third nodal beat reveals the P wave superimposed on the T wave. The fourth beat after *x* represents a normal cycle, in which the QRS complex follows the P wave after a normal interval. Note that the QRS complexes of nodal origin vary only slightly from the normal. Ventricular escape is rare; it presents QRS complexes which vary widely from the normal contour (from Pardee, H. E. B.: Clinical Aspects of the Electrocardiogram, New York, Paul B. Hoeber, Inc., 1924).

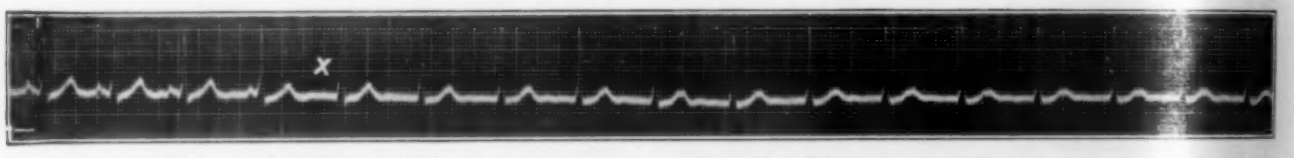


Fig. 10.—Upper nodal rhythm. At the beginning there is a shifting pacemaker with shortening of the P-R interval, until at *x* the P wave disappears and the onset of nodal rhythm occurs. The P waves coincide with the QRS complexes. No trace of an auricular complex is to be found, and the line is perfectly smooth in diastole as the result of simultaneous contraction of auricles and ventricles. This nodal rhythm has a rate of 90 per minute.

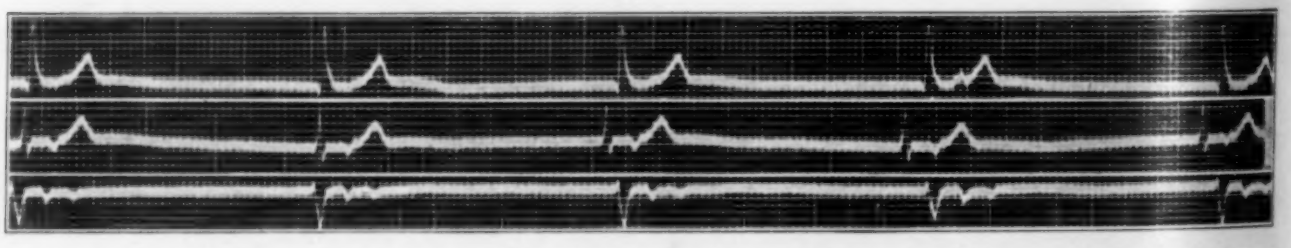


Fig. 11.—Lower nodal rhythm. The curve shows regular and slow action of the ventricles at a rate of 40 per minute. Note the P waves occur in S-T intervals.

AURICULAR FLUTTER

Auricular flutter is due to a circus movement within the auricular muscle continually following a constant path at a constant rate[9] (fig. 18). Flutter is encountered less frequently than fibrillation; it is more often transient than permanent. The auricular rate is regular at 200 to 400 per minute, only a few of the impulses passing over and initiating a ventricular contraction.

10. Armbrust, C. A., Jr., and Levine, S. A.: Paroxysmal Ventricular Tachycardia: A Study of 107 Cases, Circulation **1**: 28, 1950.

The ratio is usually 2:1, with a ventricular rate of 120 to 180 per minute. Pure flutter exhibits great regularity of cycles. Impure flutter exhibits variations from cycle to cycle. The ventricular action may be regular or irregular, rapid or slow, depending on whether a 1:1, 3:1 or 4:1 auriculoventricular block is present. Quinidine, properly used, is the drug of choice.

P waves are absent, being replaced by f waves (flutter waves). These follow each other in rapid succession, no isoelectric period being apparent. Diastole of the auricle as a whole is lacking, the various muscle fibers resting individually. The f waves are remarkably constant in rate, form and amplitude; they give rise to a serrated graph in which each complex is a duplicate of the last. Usually they are seen best in leads 2 and 3. The QRS complex is of supraventricular origin but is distorted by f waves. The T waves are not seen, since they are hidden by the alterations of the graph. Vagal stimulation usually causes halving of the rate, which immediately returns to the previous rate with release of the pressure. This helps to distinguish flutter from paroxysmal tachycardia, in which pressure either stops the attack or has no effect.

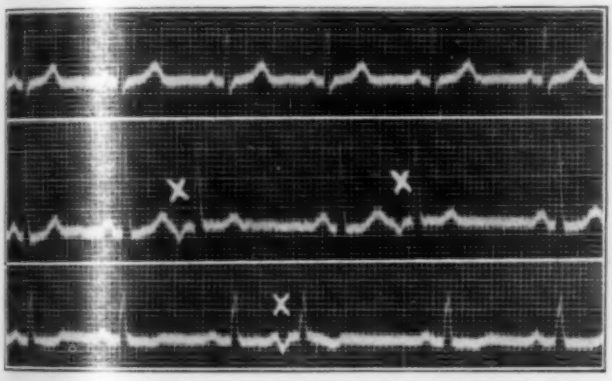


Fig. 12.—Auricular extrasystoles at *x*, which arose at a distance from the pacemaker. Abnormal P waves are decidedly different from the normal P waves.

AURICULAR FIBRILLATION

Auricular fibrillation is due to a circus movement within the auricular musculature traveling at an inconstant rate and following an inconstant path [9] (fig. 19). It is more often permanent than transient. There are small, rapid, irregular, fibrillary contractions of the auricles at a rate of 400 to 600 per minute, but only a relatively few provoke a ventricular response. The result is a pulse which is usually rapid and extremely (irregularly) irregular both as to time and force. Owing to failure of some of the weak ventricular contractions to open the semilunar valves and to initiate a pulse wave in the aorta, the pulse rate at the wrist is often less than at the apex; the difference is known as the pulse deficit. Auricular fibrillation constitutes 50 per cent of the persistent arrhythmias. Except for hyperthyroidism it usually indicates rheumatic or hypertensive heart disease. It is common in failure. It is rare in syphilitic aortitis, subacute bacterial endocarditis, cor pulmonale and congenital heart disease.

The P waves are absent. They are replaced by f waves. The QRS complex is irregularly irregular in occurrence. The T wave, if prominent, is deformed by f waves. In thyrotoxicosis the effects of muscle tremor may confuse; they may appear to be f waves. Fibrillation may be irregularly or regularly interrupted by ventricular extrasystoles. If digitalis is given, irregular extrasystoles indicate decrease in dosage; if frequent or from multiple foci, or if digitalis coupling with pulsus bigeminus or pulsus trigeminus occurs, administration of the drug should be stopped. Fibrillation may be associated with impure flutter, bundle branch block or complete heart block. Exercise increases both the rate and the irregularity, whereas it usually causes the disappearance of extrasystoles.

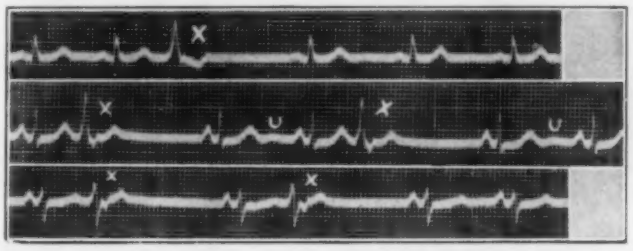


Fig. 13.—Auriculoventricular nodal extrasystoles at *x* arising low in the auriculoventricular node. The P waves occur during the S-T interval of the abnormal beats. Note the aberrant form of the QRS-T complex of these abnormal beats. Two U waves occur.

CHAOTIC HEART ACTION

Chaotic heart action (delirium cordis) is the result of complex arrhythmias caused by the simultaneous activity of many ectopic foci (fig. 20).

HEART BLOCK

Heart block may be of any grade from a slightly increased P-R interval (0.21 second) through the stage of dropped beats (4:3, 3:2, 3:1 and 2:1 block) to complete block. Heart block never gives rise to a pulse deficit as in fibrillation or extrasystoles. A 2:1 block may simulate sinus bradycardia. Exertion or atropine often changes it to a 1:1 rhythm with a doubling of the ventricular rate, whereas in bradycardia the change is a gradual increase and never a sudden change in rate. It may be caused by vagal effects, digitalis,

Fig. 14.—Ventricular extrasystoles. The distance *x* to *y* is twice that of *x* to *z*. A compensatory pause follows ventricular extrasystoles.

rheumatic, arteriosclerotic or congenital heart disease, infarction, asphyxia, calcification and tumor or gumma of the septum. Syphilis seldom is responsible.

Delayed Auriculoventricular Conduction.—This represents the mildest form of heart block (fig. 21). It is a graphic not a clinical diagnosis. Rarely, a presystolic gallop suggests the presence of delayed auriculoventricular conduction. A single characteristic observation is

prolongation of the P-R interval beyond 0.20 second. The length of the interval is fairly constant for the same patient but varies from patient to patient. The P wave, QRS complex and T wave may show various alterations. At times the condition is transitory, being of vagal origin. In many of these cases atropine therapy causes

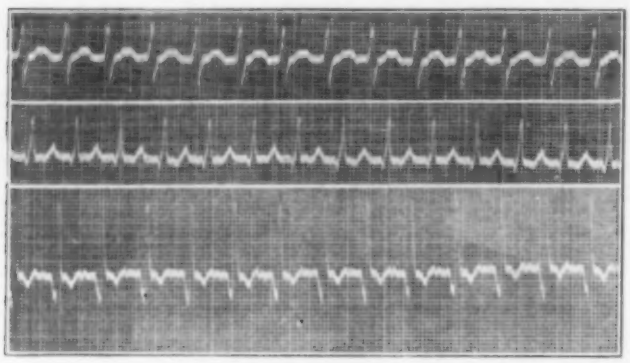


Fig. 15.—Paroxysmal auricular tachycardia, which was considered to be of nodal type at first. Note that P waves are present and are fused with the T waves. Note the abnormally sharp rise of the T waves in lead 2, due to this superimposition of the P waves.

the prolonged P-R interval to return to normal in ten to thirty minutes. It is an important sign in rheumatic heart disease and may be the only dependable evidence of cardiac involvement in a case of rheumatic fever. If delayed auriculoventricular conduction is present, the patient should be observed and the diagnosis postponed.

Dropped Beats.—Dropped beats represent second stage heart block (fig. 22). Clinical recognition of this type of block is seldom difficult; the pulse has a regular rhythm with a single beat occasionally or regularly absent. At times the P-R interval may gradually lengthen until the ventricular contraction (QRS) is completely blocked, the P-R interval becoming shortest after the long pause. Such a sequence gives rise to a Wenckebach period. The result of this change in the P-R interval is that the pause during which no ventricular contraction occurs is not twice the interval between two normal beats but is considerably shorter. This gives rise to arrhythmia, which becomes less pronounced with higher grades of block.

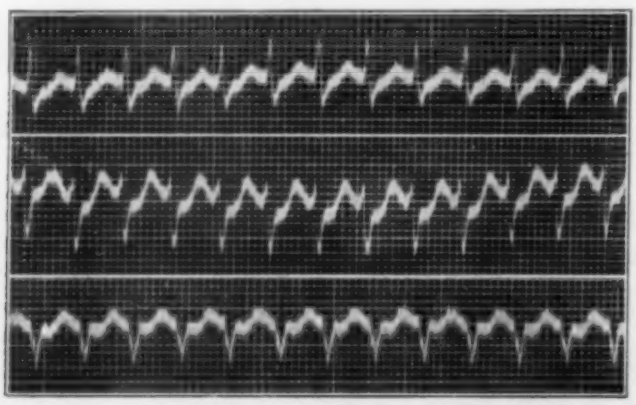


Fig. 16.—Paroxysmal nodal tachycardia: Note that no P wave is seen, being superimposed on the preceding T wave. The QRS complex is of normal duration and does not vary in form decidedly from the normal.

Partial Heart Block.—A still more advanced (third) stage of block is represented by partial heart block (fig. 23). It may be only temporary. It may be a forerunner of complete block. Here again the auricular impulses fail to provoke a ventricular response, but they do so more frequently and regularly than in second stage block. A 2:1 rhythm is the most common form. There may be a 4:3, 3:2 or 3:1 type of block. The ratio refers to the number of auricular contractions (P waves) as compared with the number of ventricular contractions (QRS complexes) present.

Bundle Branch Block.—Bundle branch block is better designated as intraventricular block, i. e., block within the ventricles. It is the result of defective conduction below the main (His) bundle (fig. 24). It is usually chronic and most frequently seen in coronary disease. Often a transient form occurs with infarction or coronary insufficiency, from digitalis or quinidine therapy and in diphtheria or other acute infection. The intermittent benign type is seldom seen. The location of the lesion in intraventricular block is controversial. The new is the exact opposite of the classic terminology, i. e., left axis deviation indicates left bundle branch block (90 per cent) and the right axis deviation indicates right bundle branch block (10 per cent). The subdivi-

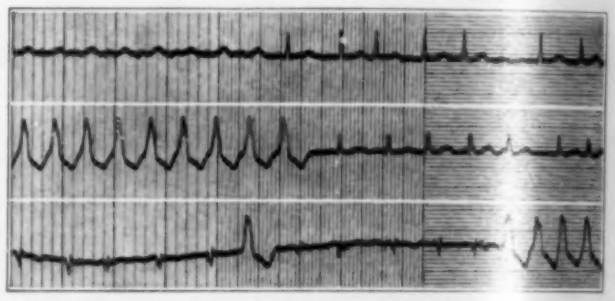


Fig. 17.—Paroxysmal ventricular tachycardia. Ventricular extrasystole in lead 3. Short paroxysms of ventricular tachycardia are seen. The first cycle and the last cycle of a paroxysm are seen in leads 3 and 2.

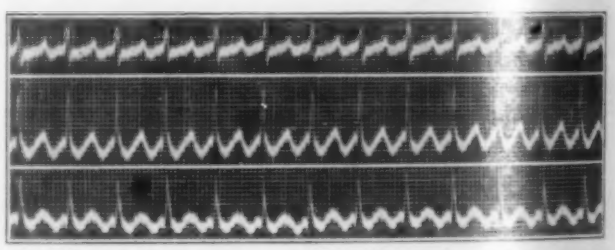


Fig. 18.—Auricular flutter with 2:1 response of the ventricles. Only every other auricular contraction provokes a ventricular response. The auricular rate is 280 per minute, the ventricular rate 140 per minute. The f waves follow each other in rapid succession. T waves and f waves are usually combined. Flutter waves occur with great regularity, giving a serrated graph.

sion into right and left types is of academic rather than clinical interest, because the prognosis is the same for both types. It is the type and extent of myocardial involvement, not the presence or location of the bundle branch lesion, that determines prognosis.

This is not a clinical but an electrocardiographic diagnosis, although a split apex beat, gallop rhythm, reduplication of heart sounds and alternans may be suggestive. The diagnosis depends on the fact that the QRS complex [11] is above 0.10 second in duration. Prolonged (delayed) intraventricular conduction signifies a QRS interval of 0.10 to 0.12 second in duration as the only significant graphic abnormality. Prolonged intraventricular conduction of bundle branch type signifies a QRS complex of high amplitude, grossly slurred and notched and more than 0.12 second in duration; the T wave usually but not always is tall and opposit. in direc-

11. A P wave precedes the QRS complex, i. e., it is not a ventricular extrasystole; the P-R interval is less than 0.10 second in duration in the bundle of Kent syndrome.

tion to the main deflection of the QRS complex in the leads of greatest excursion. More than 90 per cent of these cases show left axis deviation; less than 10 per cent show right axis deviation. There is little difference in the significance of incomplete and complete bundle branch block; either indicates an unfavorable prognosis.

Arborization Block.—Intraventricular block of lesser degree suggests subendocardial fibrosis (from coronary disease or other pathologic change) involving the Purkinje network (fig. 25). The site of the lesion cannot be determined by electrocardiography. The low voltage QRS complex is prolonged, decidedly slurred and notched. This questionable entity is best considered intraventricular block with low voltage.

Complete Heart Block.—In complete auriculoventricular block there is complete dissociation of auricles and ventricles, of the P and QRS waves (fig. 26). The former occur at a rate of 60 to 80 per minute; the latter occur independently and regularly

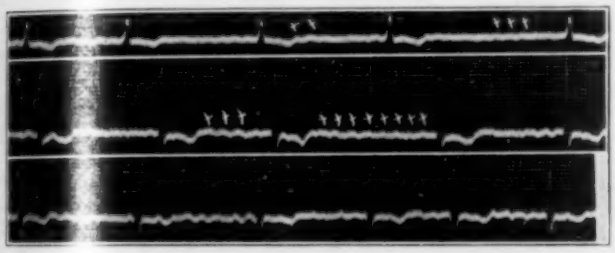


Fig. 19.—Auricular fibrillation. The small wavelets marked f are due to auricular activity. Note how faint these f waves are in lead 1. The QRS complexes occur irregularly and are not preceded by any wave of constant interval which might represent a P wave.

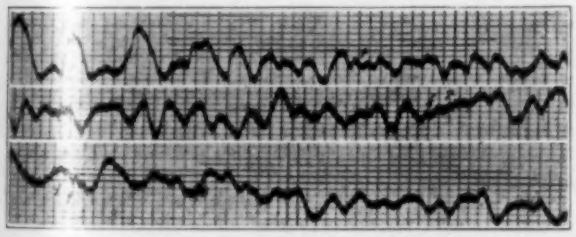


Fig. 20.—Ventricular fibrillation. The same sort of irregularly varying form is seen in this record as in the auricular waves of fibrillation of the auricles, but the waves are much larger and often bear a certain resemblance to ventricular extrasystoles. The small wavelets ff are considered due to auricular fibrillation. This illustration is from Halsey's article on ventricular fibrillation (from Pardee, H. E. B.: Clinical Aspects of the Electrocardiogram, New York, Paul B. Hoeber, Inc., 1924).

at a rate of 30 to 40 per minute. The ventricular rate is independent of the auricular rate and rhythm. Ventricular extrasystoles or auricular fibrillation may occur with complete heart block, or the latter may change into a partial block and vice versa. A partial block may shift to a normal sinus rhythm and back to a complete block. Atropine may at times cause an immediate return of a complete block to the normal rhythm.

The relation of the P waves to the QRS complexes constantly change. The P-P interval is regular, but the P wave in its relationship to the other waves varies constantly. The interval between QRS complexes if not constant varies but little. The QRS complex may be of relatively normal contour, deformed or increased in duration in one or all leads. The T wave may be upright, diphasic or inverted in one or all leads.

Adams-Stokes Disease.—In heart block pronounced slowing or ventricular asystole may cause cerebral anemia. If this lasts longer than fifteen to thirty seconds recovery is always complicated with convulsions. This syndrome is recognized as a definite clinical entity. If the attack is mild there is momentary pallor and lapse of consciousness. With longer attacks there occurs flushing of the face, cyanosis,

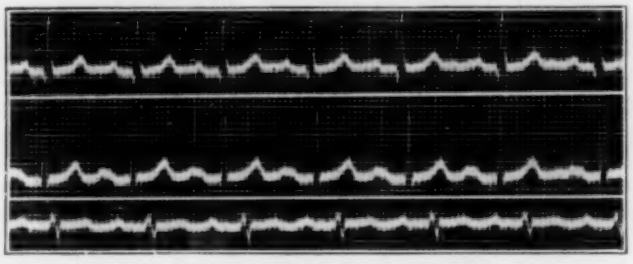


Fig. 21.—Prolonged auriculoventricular conduction; the P-R interval is 0.24 second.

twitching or even a clonic epileptiform seizure; there is ventricular asystole, or a rate of 10 or less per minute. The attack ceases when a rate of 20 to 25 per minute has become established. Epinephrine is best for the relief of an attack; ephedrine is used to prevent recurrences.

CORONARY DISEASE

Coronary disease should be considered from a physiologic point of view. Coronary insufficiency may be due to factors which increase the work of the heart or which lead to a decrease in the coronary circulation or both. Exertion, excitement, emotion, food, cold, tobacco, epinephrine, hemorrhage, shock, asphyxia or movements, postures, dreams and vasomotor changes during sleep are most commonly responsible for an increase in the load on the heart. The commonest cause for decreased coronary flow is arteriosclerosis. An incipient coronary insufficiency is recognized. A transitory form is recognized as angina pectoris, infrequently as paroxysmal dyspnea or acute pulmonary edema. Chronic coronary insufficiency of a benign, nonprogressive type or of a malignant, progressive nature may develop. Coronary failure results with further increase in the demands on the heart or with further reduction of its available blood supply. A temporary form may result from pulmonary embolism, cor pulmonale, pericarditis, dissecting aneurysm, trauma, hypertensive crises, aortic stenosis, heart

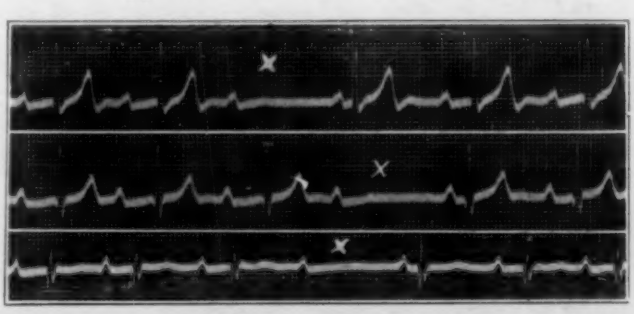


Fig. 22.—Incomplete heart block with dropped beats at *x*. The P-R interval gradually lengthens until no QRS complex follows the P wave and then becomes shortest after the pause. Wenckebach periods are evident.

block, heart failure, acute abdominal conditions, postoperative complications and infections. Infrequently, it is seen in an acute form without detectable pathologic basis, death usually being due to ventricular fibrillation or cardiac standstill. Although angina pectoris and coronary failure have the same physiologic basis, in

reversible myocardial ischemia of shorter or longer duration, coronary occlusion, based as it is on irreversible myocardial ischemia, refers to an entirely different pathologic event, i. e., myocardial infarction.

Functional tests are of questionable value, are dangerous and should be avoided. A large Q wave in lead 3 (of Pardee) is the most frequent graphic sign of chronic coronary disease. Depression of the S-T interval with flattening of the T wave, prolonged auriculoventricular or intraventricular conduction are common evidences of coronary sclerosis. During this latent period electrocardiography is an invaluable check on the clinical examination.

CORONARY OCCLUSION

Infarction near the apex of the left ventricle anteriorly (the common site) results from occlusion of the descending branch of the left coronary artery. Infarction at the base of the left ventricle posteriorly is due to right coronary artery occlusion. Anterior infarction is more common than posterior infarction (fig. 28). Infarction of the right ventricle is rare, as are combined infarctions. Graphic evidence develops in thirty minutes to forty-eight hours after a coronary accident. The process of organization within the area of infarction results in further alterations from day to day. It is from this characteristic that serial curves derive their importance. Chest leads in many cases of infarction simply magnify diagnostic changes already present in the limb leads, or they may be normal in the initial record and remain so in subsequent curves. In about 15 per cent of cases they are essential for early (emergency) diagnosis of infarction. In less urgent cases serial curves are diagnostic in almost 100 per cent of cases. An absent initial positive ventricular deflection in chest leads, although not pathognomonic, may be the most dependable single sign of previous infarction and may be the only remaining evidence of an old coronary occlusion.

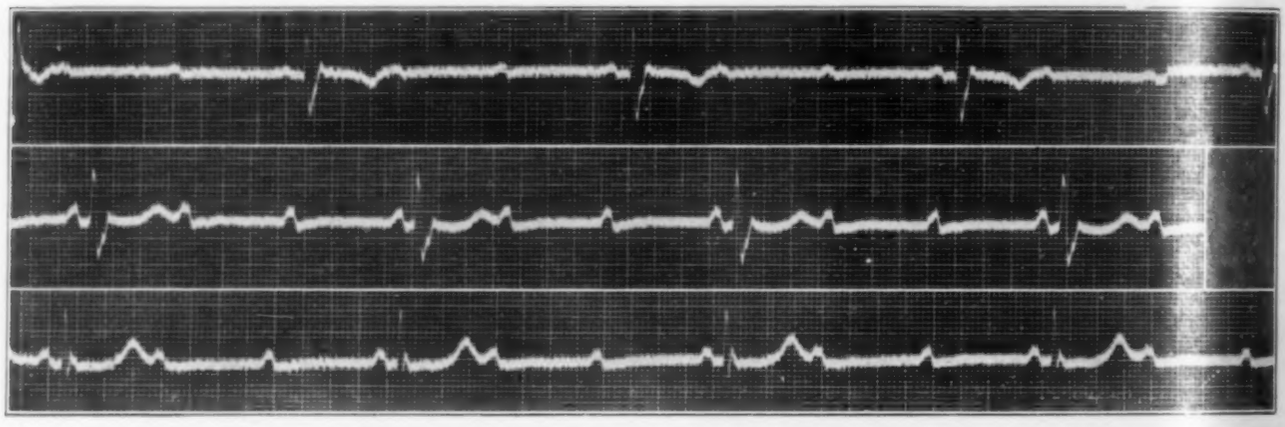


Fig. 23.—Partial (3:1) heart block, showing a ventricular contraction (QRS complex) after every third auricular contraction (P wave). The auricular rate is 90 per minute, the ventricular rate 30 per minute.

DIAGNOSIS OF CORONARY OCCLUSION

Usually the diagnosis of a typical attack of myocardial infarction can be made with relative ease. At times it is difficult or impossible to do so until all the facts are carefully considered. The pain, often severe, is located beneath the sternum and radiates to the left arm, subscapular area, jaw, throat, neck, upper part of the abdomen or to the right side of the chest and the right arm. It may be constricting or viselike, burning, boring, aching, choking or giving a sense of substernal pressure or distention. It may occur during rest or sleep and is continuous and prolonged, being little influenced by activity as is angina. The pain may be mild or absent. In posterior infarction the initial pain may occur in the interscapular area or it may occur in the left hand, wrist or forearm and radiate upward and to the precordium. Any of the following symptoms may be associated or occur as pain equivalents: a sense of prostration or of impending death, nausea and vomiting (morphine?) dyspnea, pulmonary edema, persistent cough or "cold on the chest." The early picture presents a variability in the type of circulatory failure; this is responsible for the protean manifestations of myocardial infarction. The face is ashen or pale; the features are strained and anxious, the skin cold and clammy. Cyanosis may be present. The skin may be wet with perspiration. There is a sudden fall in blood pressure which may be missed unless repeated determinations are made; these repeated determinations are an important diagnostic method at the command of every physician. The younger the patient the more significant is the sudden development of a weak pulse with feeble heart tones and the more likely they are to be due to cardiac weakness rather than to the emphysema that occurs in older persons. The pulse may be rapid, slow or irregular (fibrillation, extrasystoles, dropped beats or heart block) with inequality in the force of various beats. Pulsus alternans is seldom present, but gallop rhythm is common. A frequently undetected, evanescent pericardial friction rub is heard in less than 10 per cent of cases. Cheyne-Stokes respiration may result from left ventricular failure, morphine or embolism; mild delirium or semicoma may occur. The urinary output is diminished. A transitory or persistent glycosuria may occur. Elevation of temperature with leukocytosis and increased sedimentation rate develop within a few hours. The higher the leukocyte count the graver the prognosis.

A severe anginal attack and coronary occlusion cannot be differentiated by ordinary methods. Glyceryl trinitrate should not be used to differentiate an anginal attack from infarction because it lowers blood pressure, increases cardiac work and the tendency to shock and is dangerous. It is in such instances that portable electrocardiographic equipment is most valuable. The machine should be taken to the patient, not the patient to the machine. The classic picture presents typical progressive changes consisting of elevations of the S-T intervals which result in characteristic inversions of

the T waves. Usually there is a reciprocal relationship of S-T intervals and T waves in leads 1 and 3. The S-T elevation and T wave inversion in leads 1 and 4 indicate anterior infarction. Similar changes in leads 2 and 3 represent posterior infarction. In most instances these typical curves localize the region

Fig. 24.—Bundle branch block. This is the common (90 per cent) type of bundle branch block. The uncommon (10 per cent) type is of similar contour except for the right axis deviation present.

involved and indicate the artery occluded, forming two definite and distinct topographic groups. A large P wave in lead 2 often occurs after occlusion. Low voltage commonly develops after infarction. A large, upright, sharply peaked T wave may develop in leads 2 and 3 of a person with a T_1 type of occlusion curve. Such a reciprocal T wave may also occur in lead 1 of a T_3 type of curve. Displacement of the S-T interval persists longer in chest leads than in limb leads and may direct attention to a recent occlusion. Reversal of T wave polarity in chest leads, as an isolated observation, is not diagnostic of infarction but is significant in adults as an indication for further study. A coronary T wave in lead 1 arising from an elevated S-T segment indicates recent infarction. If this T wave in lead 1 arises from the isoelectric level it suggests an old infarction. If it originates from a depressed S-T interval it may or may not indicate

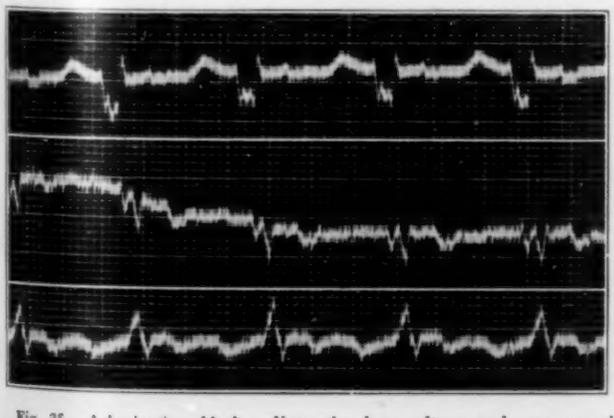


Fig. 25.—Arborization block. Note the low voltage and pronounced notching of the QRS complex in all leads.

infarction; in the absence of digitalis medication it is usually due to chronic coronary failure. The sudden occurrence of ventricular tachycardia, auricular fibrillation or flutter, a conduction disturbance, low voltage or a huge T wave in chest leads with or without reversal of polarity often indicates infarction.

The characteristic graphic changes of an established arterial hypertension often simulate those of infarction, when only a single record is available. Serial curves establish the diagnosis, since the graph of arterial hypertension, once established, persists with little change in contour. Coronary insufficiency, angina pectoris, gallstones, pericarditis, pulmonary embolism, dissecting aneurysm, intraventricular block,[12] congestive failure and digitalis may cause confusion. Recognition of the diagnostic importance of serial curves represents the most valuable recent advance in clinical electrocardiography.

CHEST LEADS

Chest leads were used in recording the first human electrocardiogram. With the introduction of the (sensitive) string galvanometer in 1903 they were discarded, since limb leads yield ample deflections. Wolferth and Wood[13] in 1932 reintroduced chest leads. With the recent sponsoring of many leads and combi-

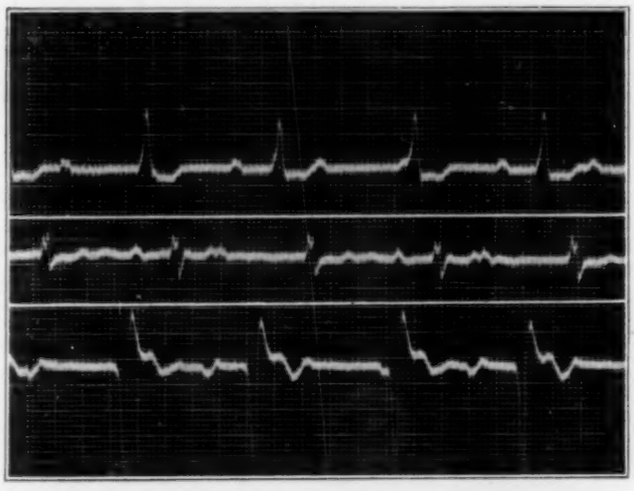


Fig. 26.—Complete block. P waves are seen running away from the QRS complexes.

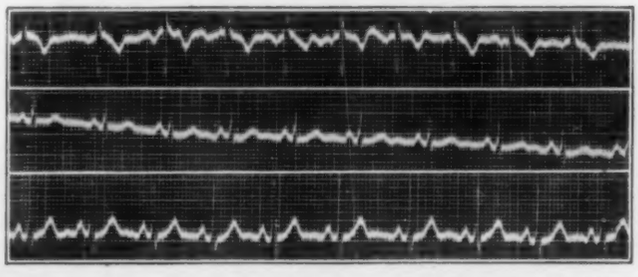


Fig. 27.—A typical graphic record of congenital dextrocardia, with all waves inverted in lead 1, and lead 2 transposed with lead 3.

nations, each with definite advantages, new methods for recording them have been presented so rapidly that it has been difficult for the clinician to keep abreast of developments. As a result of this enthusiasm a tendency to overinterpret chest leads has developed.

A simplified chest lead technic has been used since 1935 (figs. 28 and 29). It is adequate, practical and dependable. After the three standard leads are recorded the left arm electrode is removed and applied to the left side of the chest in the fifth interspace at the midclavicular line; the lead wire connections remain undisturbed. The electrode is held in place by the fingers of the patient, lightly applied to the overlying

12. Dressler, W.; Roesler, H., and Schwager, A.: The Electrocardiographic Signs of Myocardial Infarction in the Presence of Bundle Branch Block, Am. Heart J. **39**: 217 and 544, 1950.

13. Wolferth, C. C., and Wood, F. C.: The Electrocardiographic Diagnosis of Coronary Occlusion by the Use of Chest Leads, Am. J. M. Sc. **183**: 30, 1932.

folded rubber strap for insulation. Leads 1 and 3 on the control board are selected in turn, a lead CR_4 and lead 5 (inverted CF_4) being recorded in succession. They are not mirror images of each other. Lead 5 is more often helpful than lead 4. Over a period of years the characteristic features of the normal or abnormal lead IV or V were established and clinicians learned to recognize significant variations. Lead 5 is identical with this old lead V, the "favored" left leg electrode being used. Two leads have definite advantages over a single precordial lead. The recording of more than two such leads entails difficulties, increasing directly with the number of leads employed. The above technic is valuable for screening; being adequate for diagnosis in about 95 per cent of cases.

Wilson's unipolar (V) leads are the most accurate chest leads.[14] They are of the greatest advantage in the study of academic problems and are now used more widely by clinicians.[15] In about 5 per cent of cases unipolar leads should be used after the initial screening record for more detailed study.

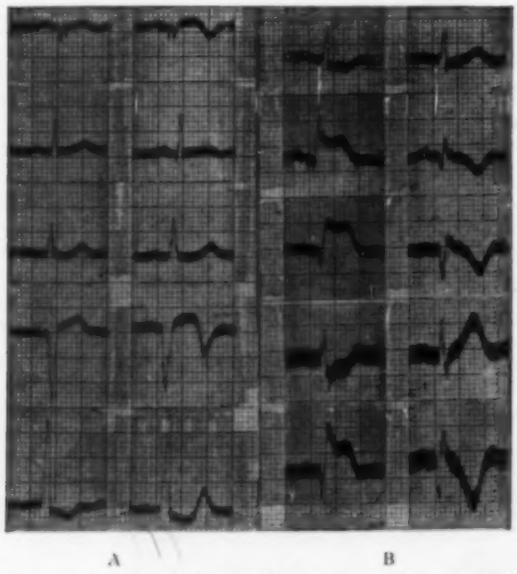


Fig. 28.—*A*, an early and late Q_1T_1 type of anterior apical infarction curve. *B*, an early and late Q_3T_3 type of posterior basal infarction curve.

SERIAL CURVES

That the characteristic electrocardiographic changes following myocardial infarction are of a progressive nature was shown by Eppinger and Rothberger[16] in 1909. Samojloff[17] in 1910 reported similar observations. The classic experiments of Smith[18] in 1918 were confirmatory. Herrick[19] in 1931 stated that "one feature needs repetition, lest it be forgotten. It is that the electrocardiogram in these cases . . . is not fixed, that for a long time it undergoes change." The progressive and regressive features of myocardial infarction have been repeatedly confirmed (figs. 29 and 30). The electrocardiograph registers these destructive and reparative changes. These processes cause the electrocardiographic records to change from day to day. After a variable period these changes may become stationary, persist indefinitely or regress; the tracing may eventually return to normal. Serial electrocardiograms, with curves recorded at proper intervals, are diagnostic of acute infarction in almost 100 per cent of cases. They enable one to follow the progress of an occlusion. They are indispensable for the proper management of these cases. After adequate history, careful examination and essential laboratory aid, serial curves afford the most valuable single aid in the diagnosis and management of acute myocardial infarction. Recognition of this fact represents the most valuable advance in clinical electrocardiography.

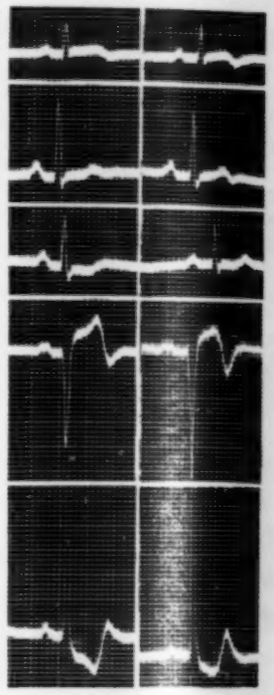
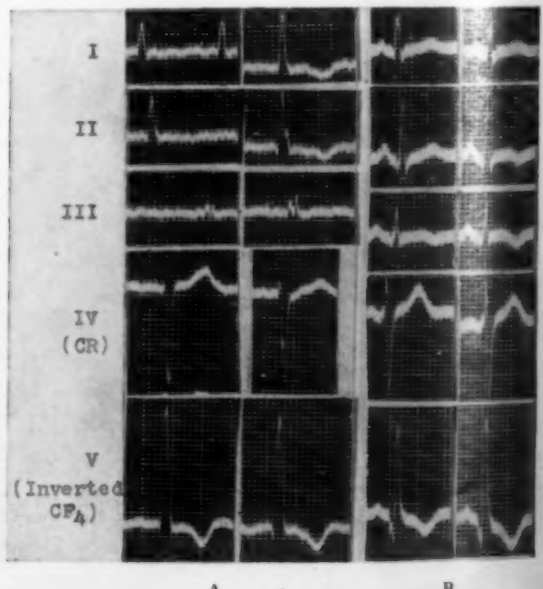


Fig. 29.—Chest lead changes, although decided, are of no assistance, since limb lead changes in the initial record are diagnostic of anterior apical infarction.



A B

Fig. 30.—Serial curves of anterior apical and posterior basal infarctions. *A*, diagnosis of infarction from absent R wave in lead 4 and Q wave in lead 5 was confirmed by limb lead changes in the subsequent record. *B*, the contour of the slightly inverted T wave in lead 3 suggested infarction, which was confirmed by subsequent record. Shouldering of an inverted T wave in lead 3 may be of diagnostic assistance; a later tracing showed typical inversion of the T wave in leads 2 and 3.

4753 Broadway (40).

14. Wilson, F. N.; Johnston, F. D.; Macleod, A. G., and Barker, P. S.: Electrocardiograms That Represent the Potential Variations of a Single Electrode, Am. Heart J. **9**: 447, 1934. Goldberger, E.: A Simple Indifferent Electrocardiographic Electrode of Zero Potential and a Technic of Obtaining Augmented Unipolar Extremity Leads, ibid. **23**: 483, 1942. Bryant, J. M.; Johnston, F. D., and Wilson, F. N.: Unipolar Electrocardiographic Leads: Effects Produced by Eliminating the Resistors Between the Limb Electrodes and the Central Terminal, ibid. **37**: 321, 1949. Rappaport, M. B., and Williams, C.: An Analysis of the Relative Accuracies of the Wilson and Goldberger Methods for Registering Unipolar and Augmented Unipolar Electrocardiographic Leads, ibid. **37**: 892, 1949.

15. Carter, J. B.: Fundamentals of Electrocardiographic Interpretation, ed. 3, Springfield, Ill., Charles C Thomas, Publisher, in press.

16. Eppinger, H., and Rothberger, C. J.: Zur. Analyse des Elektrokardiogramms, Wien. klin. Wchnschr. **22**: 1091, 1909.

17. Samojloff, A.: Weitere Beitrage zur. Electrophysiologie des Herzens, Arch. f. d. ges. Physiol. **135**: 417, 1910.

18. Smith, F. M.: The Ligation of the Coronary Arteries with Electrocardiographic Study, Arch. Int. Med. **22**: 8 (July) 1918.

19. Herrick, J. B.: The Coronary Artery in Health and Disease, Am. Heart J. **6**: 589, 1931.

Clinical Notes, Suggestions and New Instruments

ANGIONEUROTIC EDEMA AND RASH DUE TO AUREOMYCIN

Reaction in a Patient with Multiple Sensitivities

ALBERT D. PARETS, M.D.
New York

Significant toxic reactions to orally administered aureomycin are believed to be rare,[1] and the likelihood of their frequent occurrence has been minimized in the literature. We propose in this report to call attention to a recently observed severe reaction and to review briefly the less well known side-effects which may become more common as the use of this antibiotic is extended.

REPORT OF CASE

C. R., a white man aged 35, had always been in good health. He had no personal or family history of allergy, and prior to the manifestations noted herein had not reacted adversely to drugs.

In December 1946 he had mild subacute left maxillary sinusitis, which was treated with a penicillin nasal spray with apparent cure. Thereafter he was well until April 1948, when the left antrum was found to be chronically infected. After unsuccessful conservative treatment by an otolaryngologist a maxillary antrotomy was performed in June 1948. Penicillin in oil and wax was administered intramuscularly once daily for three days postoperatively. One week later the patient had typical urticarial lesions over both buttocks, such as were seen not infrequently when this repository form of penicillin was in common use.

In August 1948 the patient contracted primary atypical nonbacterial pneumonia. Because of the previous reaction to penicillin his physician prescribed sulfadiazine; however, this medicament had to be discontinued when vomiting ensued. Crystalline penicillin G in isotonic sodium chloride solution was then administered intramuscularly every three hours for five days. Five days later there appeared a serum-sickness-like reaction, characterized by fever, generalized urticaria, arthralgia, headache and diarrhea. Various antihistaminic drugs were tried but were of no benefit, the constitutional reaction to the antibiotic lasting ten days.

After the primary atypical pneumonia, mild cough persisted and the patient experienced frequent exacerbation of cough with expectoration and nasal congestion. He sought treatment in April 1949 because of increasing cough and fatigue. Examination revealed rhonchi and sibilant and sonorous rales at the right lung base and fine and medium moist rales at the left lung base. Sulfonamide drugs were prescribed and taken without untoward reaction. Within a week the pulmonary signs had disappeared. In June 1949 there was again exacerbation of cough and with it expectoration of much thick, yellow, nonodorous sputum. There was no thoracic pain or hemoptysis. Fine moist rales were heard at the left lung base. A definite increase in the bronchial markings extending toward the right base were noted fluoroscopically. A sputum culture grew alpha hemolytic Streptococcus and nonhemolytic Staph. albus. Acid-fast bacilli were not found. A bronchogram preceded by local anesthesia with butacaine sulfate was done with iodized oil as the contrast medium. This revealed early bronchiectasis of the right middle and lower lobes, manifested by definite cylindric dilatation of the bronchi. During and immediately after the procedures incident to the making of the bronchogram the patient felt well. However, about fifteen hours later there was sudden onset of intense nasal congestion followed rapidly by severe edema of the eyelids and later of the face. This episode was considered to be a delayed allergic reaction to butacaine sulfate. Antihistaminic drugs produced considerable relief.

Postural drainage was taught the patient, and aureomycin hydrochloride, 2 Gm. daily, was prescribed. In view of the previous sensitivity to parenterally administered penicillin it was decided not to use this antibiotic by inhalation or intrabronchial instillation. On the seventh day of aureomycin therapy when a total of 12 Gm. had been taken, periorbital edema developed, followed in a few hours by facial edema and a rash. The edema became intense, causing almost complete closure of the eyes and pronounced distortion of the face. The rash, which began in the lower extremities and spread upward to involve the entire body with the exception of the head, neck, hands and feet was a patchy, macular, nonpruritic erythematous eruption. Demarcation between normal and involved skin at the wrists and ankles was fairly sharp. There was no fever, rhinitis, laryngeal edema, asthma or arthralgia. The eruption remained static for about five days and cleared without desquamation. Aureomycin therapy was discontinued promptly with the onset of the reaction and antihistaminic drugs were given, but they did not seem to influence the edema or the rash, both of which subsided in a week. Concomitant with the onset of the reaction to aureomycin the patient's cough and expectoration diminished considerably. Sputum became thin, clear and small in amount; within ten days respiratory symptoms disappeared completely and abnormal signs were not heard in the lungs.

In late August and September 1949 typical pollen hay fever symptoms appeared for the first time and skin testing revealed positive reactions to ragweed.

COMMENT

Except for nausea, vomiting, loose bowel movements, occasionally diarrhea, epigastric distress and pruritus ani, side-effects due to orally administered aureomycin are not well known. An evanescent type of reaction, consisting of an abrupt rise and fall in temperature, occasionally accompanied with a shocklike picture with a drop in blood pressure and tachycardia, has been described as occurring in the course of treatment of brucellosis.[2] This is believed to be akin to a Herxheimer reaction. A true febrile Herxheimer response has been observed frequently during treatment of early syphilis when large doses of aureomycin are administered,[3] but a cutaneous Herxheimer reaction has not as yet been noted. Inflammation of the mouth and scrotum as well as pruritic papular lesions on the shoulders of patients have been observed during the course of Q fever therapy.[4] These symptoms did not necessitate cessation of therapy or become progressively worse while administration of the drug was continued. A severe reaction to aureomycin was recently described by Riese.[5] As experimental treatment for obstructive jaundice thought to be due to a virus infection he administered aureomycin to a patient at the rate of 3 Gm. daily for six weeks. At the end of this period "burning in the chest" and swelling of the legs appeared, but symptoms subsided within two days after the patient discontinued treatment. Aureomycin was readministered, and at the end of two weeks a toxic reaction, consisting of edema of the face, hands, forearms, ankles and feet, developed in association with a papulovesicular eruption beneath the breasts, between the thighs and about the anus. The patient had burning sensations in the mouth, where an inflammatory reaction was noted. Symptoms disappeared within a few days after withdrawal of the drug. Later, as little as 1.25 Gm. of aureomycin caused a reappearance of the symptoms, indicating that true sensitization had developed.

Although the patient described in the present communication had not had aureomycin on any previous occasion the symptoms he manifested suggest a hypersensitivity type of response similar in nature to his reaction to butacaine sulfate.

SUMMARY

A patient with multiple sensitivities was treated with 2 Gm. of aureomycin hydrochloride daily for early bronchiectasis. A severe reaction, consisting of angioneurotic edema of the face

1. Spink, W. W., and Yow, E. M.: Aureomycin: Present Status in the Treatment of Human Infections, J. A. M. A. **141**: 964 (Dec. 3) 1949.

2. Spink, W. W.; Braude, A. I.; Castanedo, M. R., and Goytia, R. S.: Aureomycin Therapy in Human Brucellosis Due to Brucella Melitensis, J. A. M. A. **138**: 1145 (Dec. 18) 1948. Braude, A. I.; Hall, W. H., and Spink, W. W.: Aureomycin Therapy in Human Brucellosis Due to Brucella Abortus, ibid. **141**: 831 (Nov. 19) 1949.

3. Rodriquez, J.; Plotke, F.; Weinstein, S., and Harris, W. W.: Aureomycin and Its Effects in Early Stages of Syphilis, J. A. M. A. **141**: 771 (Nov. 12) 1949.

4. Lennette, E. H.; Meiklejohn, G., and Thelen, H. M.: Treatment of Q Fever in Man with Aureomycin, Ann. New York Acad. Sc. **51**: 331 (Nov. 30) 1948.

5. Riese, J. A.: Toxic Reaction to Aureomycin, J. M. Soc. New Jersey **46**: 467 (Oct.) 1949.

and a fairly generalized nonpruritic erythematous skin eruption, appeared on the seventh day of treatment and lasted one week. Treatment with various antihistaminic drugs was of no benefit.

The literature dealing with the toxic effects of orally administered aureomycin has been reviewed briefly, and some less well known but significant side actions for which one should watch are described. Sensitization to aureomycin apparently can occur.

133 East Fifty-Eighth Street (22).

Council on Physical Medicine and Rehabilitation

REPORT OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following article.

HOWARD A. CARTER, *Secretary.*

ABSTRACT OF THE MINUTES OF THE MEETING OF THE COUNCIL ON PHYSICAL MEDICINE AND REHABILITATION

Dec. 2 and 3, 1949

The Annual Meeting of the Council on Physical Medicine and Rehabilitation was held Friday and Saturday, Dec. 2 and 3, 1949, at the Headquarters of the American Medical Association. Council members present were: Drs. Morris A. Bowie, Anthony C. Cipollaro, W. E. Garrey, Frank H. Krusen, Frank R. Ober, George Morris Piersol and Derrick Vail.

The Vice Chairman read a letter from the Chairman, Dr. John S. Coulter, in which he tendered his resignation as Chairman of the Council. The Council accepted the resignation with regret and voted that he be appointed Chairman Emeritus. (Dr. Coulter died Dec. 16, 1949.) Dr. Frank H. Krusen was unanimously elected Chairman and Dr. Frank R. Ober Vice Chairman.

In a letter, Dr. H. B. Williams tendered his resignation as member of the Council. The Council reluctantly voted to advise the Board of Trustees to accept his resignation, and the Council members spoke highly of the valuable services he had rendered. Dr. Howard A. Rusk was elected to succeed Dr. Williams.

Dr. W. E. Garrey presented a report of the Committee on Scientific Research of the Council. Grants in aid of research were recommended for investigation of certain problems in clinical thermometry and of the use of radium D in ophthalmology. It was voted not to recommend grants for the investigation of glycol vaporizers or ultraviolet irradiation of the blood.

The Council voted that henceforward the groups of consultants should be designated as Advisory Committees. Definitions of the word "rehabilitation" were discussed, and it was voted that the following definition be adopted:

"Rehabilitation is the process of attempting to improve the health of handicapped people and returning them as useful members of society at the earliest possible moment."

The Committee on Field, Scope and Present Status reviewed the list of products considered by the Council. The Council voted not to consider artificial limbs, orthopedic mattresses, bed boards, bed cranes, hot pack heaters or gastroscopes. It was voted, however, to go forward with the critical consideration of certain mechanical bicycle exercisers. There was discussion of unsatisfactory advertising of disinfecting ultraviolet lamps, gylcol vaporizers and certain hearing aids.

The Council heard reports on essential requirements for schools of physical therapy and schools of occupational therapy, on the work of the Therapeutic Trials Committee, radio programs arranged by the Bureau of Health Education, electrocardiographs, electroencephalographs, problems of electrical terminology as related to generators used in diagnosis and treatment, contact lenses and other ophthalmic devices and problems of illumination of schools and other buildings. After a report on American health resorts, the name of one health resort was added to the accepted list.

In connection with a report on artificial respiration, there was discussion of the place of electrical stimulation of the phrenic nerves among methods of resuscitation.

A report on audiometers and hearing aids noted that during the year 1949 the Advisory Committee and the Council considered 27 hearing aids and 5 audiometers. One hearing aid was removed from the list of accepted devices because of complaints about the misleading, unwarranted and exaggerated advertising used by the manufacturer.

The use of radon ointment and preparations of thorium X in dermatology, the use of radium in otology and of radium D in ophthalmology and the misuse of roentgen rays for epilation by unqualified operators were discussed in a report from the Advisory Committee on Roentgen Rays, Radium and the Medical Aspects of Atomic Energy. It was noted that the Council is cooperating in the development of a general Glossary of Nuclear Energy Terms under the auspices of the National Research Council.

The Council was informed of the progress of the *Handbook of Physical Medicine and Rehabilitation*, to be published April 19 by the Blakiston Company. Of the new chapters in this edition, five have not as yet been printed in THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION. The chapters retained from previous editions have been revised and some completely rewritten.

The Council voted to express appreciation of the invaluable aid of the Advisory Committees and individual consultants in a statement to be printed in THE JOURNAL.

Attention was called to the fact that the Council will soon reach the quarter-century mark in its history and that the recent establishment of a Section on Physical Medicine and Rehabilitation in the American Medical Association by the Board of Trustees is an indication of the extent to which the Council has gained recognition for this important field of medicine.

REPORT OF THE COUNCIL

The Council on Physical Medicine and Rehabilitation has authorized publication of the following report.

The Council wishes to express its appreciation for the valuable cooperation of the Advisory Committee on Electrocardiographs for its expert services. The Committee members are: Drs. Howard Burchell, George Fahr, Harold Feil, Harold E. B. Pardee, William D. Stroud and Carl J. Wiggers.

HOWARD A. CARTER, *Secretary.*

MINIMUM REQUIREMENTS FOR ACCEPTABLE ELECTROCARDIOGRAPHS

(Revision)

1. The electrocardiograph shall be equipped with a suitable recording mechanism.

2. The recorded response of the instrument to externally applied square wave voltages shall be adjustable to a sensitivity of 1 cm. per millivolt when this voltage is applied to the leads of the instrument through a series resistance of 2,000 ohms. This sensitivity shall be maintained without further adjustment within plus or minus 5 per cent for a period of three minutes under operating conditions. Operating conditions for the purpose of this requirement are defined (1) for alternating current operated instruments, as line voltages varying from 105 to 130 volts at frequencies within plus or minus 2 per cent of the specified value for the instrument and (2) for battery operation, as one or more of the batteries operating at 80 per cent of the rated life or voltage whichever condition occurs first. Under these conditions the response of the instrument to its incorporated standardizing signal of 1 millivolt shall be within plus or minus 5 per cent of the response to the externally applied test signal. The instrument shall incorporate means of superimposing its intrinsic test signal on the cardiographic tracing as recorded from any lead position. It must be possible to maintain this test signal voltage for a period of two or more seconds.

3. One centimeter response to one millivolt peak sinusoidal voltage variation up to 15 cycles per second shall not fall below

90 per cent and up to 40 cycles per second shall not fall below 80 per cent of the square wave response to equivalent voltage variation. The amplitude response of the instrument to 1 millivolt peak sinusoidal voltage variation up to 300 cycles per second shall not exceed 100 per cent of the square response to equivalent voltage variations.

4. The response of the instrument at 0.2 second after the application of a direct current of 1.0 millivolt shall not deviate more than plus or minus 10 per cent from the response at 0.04 second. The test voltage of 1 millivolt should be applied to the leads of the instrument through a series resistance of 2,000 ohms.

5. When the instrument is adjusted to the sensitivity specified in requirement 2 the recorded response shall be directly proportional to the applied voltage (direct current) within plus or minus 5 per cent over a range of 2 cm. on either side of zero.

6. With the two input terminals connected together, a potential difference applied between them and ground should not produce a deflection of more than 1 per cent of that produced by the same potential difference applied between the two input terminals.

7. The instrument shall incorporate a means of continuously recording time intervals on the record and this must be by means of a device operating independently of the record-driving mechanism. These intervals shall be of one second duration or less and the timing device shall be accurate within plus or minus 2 per cent. However, a means of superimposing this time signal on the electrocardiographic tracing at the operator's will will be accepted as fulfilling this requirement. It should be possible to record the time signal for a period of at least two seconds. Recording paper preruled so as to indicate time intervals, assuming a constant paper speed, shall not be construed as fulfilling this requirement.

8. All commercial instruments shall be approved as to shock hazard by the Underwriters' Laboratories, Inc.

9. Instruments shall be tested clinically and in the judgment of the Advisory Committee should produce records which are satisfactory for diagnostic purposes.

10. Instruments shall be submitted and considered according to the Official Rules of the Council on Physical Medicine and Rehabilitation.

11. The standards of merchandising and the acceptability of advertising shall meet the rules of the Council on Physical Medicine and Rehabilitation.

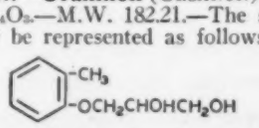
Council on Pharmacy and Chemistry

NEW AND NONOFFICIAL REMEDIES

The following additional articles have been accepted as conforming to the rules of the Council on Pharmacy and Chemistry of the American Medical Association for admission to New and Nonofficial Remedies. A copy of the rules on which the Council bases its action will be sent on application.

R. T. STORMONT, M.D., *Secretary.*

MEPHENESIN.—Oranixon (ORGANON).—3-*o*-Toloxy-1,2-propanediol.—$C_{10}H_{14}O_3$.—M.W. 182.21.—The structural formula of mephenesin may be represented as follows:



Actions and Uses.—Mephenesin, a synthetic cresol glyceryl ether, produces transient relaxation and paralysis of skeletal muscle in small laboratory animals. It depresses reflex excitability of nerve centers and potentiates barbiturate anesthesia. In doses which do not cause paralysis or narcosis, it antagonizes the action of strychnine.

The drug is quickly destroyed in the body and has a low toxicity. Intravenous injection of a 10 per cent concentration will cause hemolysis of red cells with hemoglobinuria.

The drug acts on the reflex centers of the brain and spinal cord and in high doses depresses cortical cell function and transmission of nerve impulses across synapses. Although the effects of mephenesin resemble those of curare, the mechanism of action is different. High concentrations of mephenesin have local anesthetic properties. Thus, oral administration may cause transient anesthesia of the oral mucosa.

Although the use of the drug is still largely experimental, its low toxicity permits its cautious trial for the production of muscular relaxation in light surgical anesthesia, if it is remembered that it may potentiate the action of barbiturates. It may also be tried in the treatment of spasticity and tremor of Parkinson's disease; in the treatment of muscle spasm in certain cases of hemiplegia, tetanus and certain other spastic conditions; and in the treatment of athetoid or choreiform movements.

The effects of mephenesin are quite temporary and since little is known of its chronic toxicity, prolonged use requires constant watch for possible untoward effects. It should be used as an adjunct to surgical anesthesia only by those with special experience in the field.

Dosage.—For adults, 1 Gm. given orally three to five times a day. The dosage should be spread evenly throughout the waking hours. If a favorable response is not seen within 72 hours, the drug should be discontinued.

Tests and Standards.—

Physical Properties: Mephenesin is an odorless, crystalline, white powder which melts between 67 and 72 C. It is freely soluble in alcohol, chloroform and ether; and sparingly soluble in benzene and water. The p_H of a saturated solution is about 6.0. The extinction coefficient, E(1%, 1 cm.), at 2700 A is 81 ± 3.

Identity Tests: Dissolve about 10 mg. of mephenesin in 10 drops of sulfuric acid: a pink color develops (*presence of easily carbonizable substances*). Add 1 drop of 3 per cent formaldehyde solution: an intense red color develops.

Suspend about 0.1 Gm. of mephenesin in 2 ml. of 5 per cent sodium hydroxide and add 2 ml. of potassium permanganate T.S. Warm the mixture until the green color changes to brown, add 5 ml. of water and filter the mixture. To the filtrate add a few drops of diazotized *p*-nitroaniline solution (free of nitrous acid): a deep red color results which is discharged when the solution is acidified with diluted hydrochloric acid (*presence of a phenolic group*).

Purity Tests: Dissolve about 0.1 Gm. of mephenesin in 10 ml. of water: the solution is clear and colorless. Dry about 1 Gm. of mephenesin, accurately weighed, in a vacuum over phosphorus pentoxide at room temperature for 24 hours: the loss in weight is not more than 0.5 per cent.

Char about 1 Gm. of mephenesin, accurately weighed. Cool, add a few drops of sulfuric acid to the charred mass and ignite: the amount of residue is not more than 0.1 per cent.

Assay: Accurately weigh about 0.150 Gm. of mephenesin, transfer it to a 1000 ml. volumetric flask and make up to the mark with water. Transfer 100 ml. of this solution to a 250 ml. volumetric flask and make up to the mark with water to give a final concentration of about 0.06 mg. per ml. Spectrophotometrically determine the light absorption at 2700 A. The extinction coefficient, E(1%, 1 cm.), at 2700 A is 81. The amount of mephenesin present is not less than 98 nor more than 102 per cent.

MEPHENESIN TABLETS: *Identity Tests:* The tablets respond to the identity tests given in the monograph for Mephenesin.

Assay: Accurately weigh 20 tablets, calculate their average weight and grind them. Accurately weigh a sample of the powder equivalent to 1 Gm. of mephenesin and transfer it to a 1000 ml. volumetric flask. Fill to the mark with water and shake the flask for 1 hour. Filter the mixture through a dry filter paper, discarding the first 50 ml. of filtrate. Transfer 50 ml. of the filtrate to a 1000 ml. volumetric flask and make up to the mark with water to give a final concentration of 0.050 mg. per ml. Measure the light absorption at 2700 A as described in the monograph for Mephenesin. The amount of mephenesin present is not less than 95 nor more than 105 per cent of the labeled amount.

MEPHENESIN ELIXIR: *Identity Tests:* The extracted mephenesin (see assay) melts between 67 and 72 C. and responds to the identity tests given in the monograph for Mephenesin.

Assay: (Mephenesin) Pipet 25 ml. of the elixir into a 250 ml. separatory funnel and extract once with 50 ml. and then 3 times with 25 ml. of chloroform. Combine the extracts and wash them with three 25 ml. portions of saturated sodium chloride solution. Combine the washings and extract them with two 15 ml. portions of chloroform. Combine all the chloroform extracts in a 250 ml. beaker and carefully evaporate the chloroform on a steam bath in a current of air until a thick syrup remains. Cool the residue, add 25 ml. of ether and decant the ether layer into a 250 ml. separatory funnel. Repeat the extraction and decantation with three 10 ml. portions of ether. Rinse the beaker with three 10 ml. portions of water and add the water extracts to the ether extracts. Shake the extracts, then separate the ether and water layers. Wash the ether layer with three 15 ml. portions of water. Combine the washings and extract them with two 25 ml. portions of ether. Combine all the ether extracts in a tared 250 ml. beaker and evaporate the ether in a steam bath in a current of air. Dry the residue at 105 C. for 30 minutes and then in a vacuum oven for 4 hours. Weigh the extracted mephenesin. The amount of mephenesin present is not less than 90 nor more than 110 per cent of the labeled amount.

(Alcohol) Determine the alcohol content by the method of *U.S.P. XIII*, p. 615, using 50 ml. of the elixir. The amount of alcohol present is not less than 100 nor more than 110 per cent of the labeled amount.

ORGANON, INC., ORANGE, N. J.

Elixir Oranixon: 237 cc., 473 cc. and 3.78 liter bottles: A 20 per cent alcohol solution containing 0.1 Gm. of mephenesin in each cc. Preserved with 0.037 per cent of methylparaben-U.S.P. and 0.025 per cent of propylparaben-U.S.P.

Tablets Oranixon: 250 mg.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION
535 N. DEARBORN ST. - - - CHICAGO 10, ILL.

Edited by
AUSTIN SMITH, M.D.

Associate Editor
JOHNSON F. HAMMOND, M.D.

Editor for Current Medical Literature, GEORGE HALPERIN, M.D.

Subscription price - - Twelve dollars per annum in advance
Cable Address - - - - "Medic, Chicago"
SATURDAY, JUNE 17, 1950

CAROTID SINUS SYNDROME

Knowledge of the role of the carotid sinus reflex in regulating and controlling the endovascular blood pressure is due chiefly to the researches of Hering. These researches, confirmed by those of Heymans and de Castro, demonstrated that the dilated portion of the bifurcation of the common carotid artery is richly supplied with sensory receptors which originate in the adventitia and leave the sinus as the sinus nerve of Hering or the intercarotid nerve of de Castro to join the glossopharyngeal nerve. Thus, afferent direct nerve connection exists between the carotid sinus and medullary centers.

Weiss and Baker [1] demonstrated that an abnormally sensitive carotid sinus mechanism can be responsible for attacks of unconsciousness and convulsions and that such attacks can be reproduced by pressure over one carotid sinus. These authors found in a study of 15 patients with hyperactive carotid sinus reflex that the attacks were associated wtih cerebral anoxemia resulting either from cardiac asystole or from a primary reflex depression of the blood pressure. The three motor pathways in man responsible for syncope involve the vagus nerve, the vasomotor depressor nerves or the central motor pathways. Three types of carotid sinus syndrome have been described. In the vagal type the symptoms, particularly the dizziness, fainting and weakness, result from cardiac asystole. The depressor type usually appears in association with one of the other two types. The symptoms result from primary reflex vasodilatation and secondary depression of the blood pressure entirely unrelated to cardiac slowing or any form of cardiac arrhythmia. In the cerebral type the symptoms result apparently from impulses which travel directly to the brain. Neither atropine nor epinephrine aborts or relieves the cerebral type of attack.

The type of carotid sinus reflex mechanism responsible for the symptoms in a given case can be determined by observation of the heart rate and the blood pressure during an induced attack and the effect of atropine sulfate or ephedrine.

1. Weiss, S., and Baker, J. P.: The Carotid Sinus Reflex in Health and Disease: Its Role in the Causation of Fainting and Convulsions, Medicine **12**: 297, 1933. Weiss, S.; Capps, R. B.; Ferris, E. B., Jr., and Munro, D.: Syncope and Convulsions Due to a Hyperactive Carotid Sinus Reflex, Arch. Int. Med. **58**: 407 (Sept.) 1936.

Sigler,[2] in a study of hyperactive cardioinhibitory reflex in a series of 1,151 male and 735 female subjects, found that the reflex occurs with greater frequency and in higher degrees of response in men than in women. The frequency and degree of response were increased as age advanced. The reflex occurs with the greatest frequency and the highest degree of response in coronary disease.

Nathanson [3] found in a study of 115 patients with a hyperactive cardioinhibitory reflex that 77 (67 per cent) were without symptoms suggestive of carotid sinus syndrome. Thirty-four of 40 patients in whom cardiac standstill could be produced in response to mechanical stimulation of the carotid sinus showed evidence of coronary disease of the anginal type. Of Draper's 59 cases of carotid sinus syndrome 28 (47.5 per cent) showed evidence of hypertensive cardiovascular disease. In a recent communication Draper [4] reports on 11 patients with carotid sinus syndrome of the cardioinhibitory type. Ten of these were men; 2 were in the eighth, 2 in the seventh, 5 in the sixth and 2 in the fifth decade. There was evidence of heart disease in 9 cases.

The pharmacologic treatment of the carotid sinus syndrome has been directed either toward blocking of vagal impulses by atropine or belladonna or toward establishment of independent ventricular rhythm by ephedrine. Removal of irritating physical and psychic factors and administration of phenobarbital are sometimes effective in the milder cases. In the severer cases attempts have been made to treat the syndrome by denervation of the carotid sinus. Craig and Smith [5] practiced denervation of the carotid sinus in 13 patients. Of the 12 followed up, results were excellent in 4, good in 1, fairly good in 4 and poor in 3. Cattell and Welch [6] feel that the surest way of denervating the carotid sinus is by section of the carotid sinus nerve and by extensive stripping of the common carotid artery, the internal and external carotid arteries and by removal of the intercarotid tissue. These authors performed a denervation operation on 3 patients. The follow-up in 1 patient 18 months and in 2 patients four years or longer after operation revealed no abnormal sensitivity over the carotid sinuses.

Awareness of the existence of the entity hypersensitive carotid sinus reflex should be of help in differentiation of syncopal and convulsive attacks due to petit mal and grand mal epilepsy, hysteria, Ménière's disease, narcoleptic and cataleptic seizures.

2. Sigler, L. H.: Hyperactive Cardioinhibitory Carotid Sinus Reflex: Possible Aid in the Diagnosis of Coronary Disease, Arch. Int. Med. **67**: 277 (Jan.) 1941.

3. Nathanson, M. H.: Hyperactive Cardioinhibitory Carotid Sinus Reflex, Arch. Int. Med. **77**: 491 (May) 1946.

4. Draper, A. J.: The Cardioinhibitory Carotid Sinus Syndrome, Ann. Int. Med. **32**: 700 (April) 1950.

5. Craig, W. M., and Smith, H. L.: The Surgical Treatment of Hypersensitive Carotid Sinus Reflexes, Yale J. Biol. & Med. **11**: 415 (May) 1939.

6. Cattell, R. B., and Welch, M. L.: The Carotid Sinus Syndrome: Its Surgical Treatment, Surgery **22**: 59 (July) 1947.

CANCER DIAGNOSTIC TESTS

There has been an arduous search for differences between persons with cancer and those who are cancer free—subtle differences in the blood, sputum, urine and various body chemicals. Cancer diagnostic tests are based on the belief that these differences are specific and that they can be measured with sufficient reliability and accuracy to serve as a ready means of case finding or diagnosis. The reception accorded to diagnostic tests has followed a discouraging pattern. Each new proposal generally is greeted with a flurry of enthusiasm, followed by sporadic trial, inconclusive results and then skepticism and frequently rejection—without the true worth of the test being assayable either from the original author's data or from the reports of those attempting to confirm his work.

Much of the confusion regarding the value of proposed diagnostic tests for cancer has stemmed from two basic failures: first, the failure to distinguish between the different purposes that tests may have, and to evaluate performance in terms of each purpose, and second, the failure to conduct the trial of the test under decisive conditions. The mistakes of the past can be avoided if the logic of diagnostic tests is thoroughly understood.[1] To avoid the first failure, it is essential to provide different standards of performance for tests having different purposes. The most important of these possible uses might be as follows: 1. To serve as a sensitive mass-screening device to distinguish cancer suspects in the asymptomatic, apparently healthy population. Such a test must be simple and inexpensive to apply and would serve to separate the population into two groups: those for whom the result of the test for cancer is negative and a small group in which results are positive and which then requires intensive examination for further diagnosis. 2. To establish or rule out the possibility of cancer in a patient with etiologically obscure symptoms. This class of tests would be especially helpful to practitioners. 3. To provide decisive evidence for differential diagnosis as to the nature of demonstrable pathology. Internists, surgeons and radiologists have great need for this type of test.

Confusion of these related but different purposes has resulted in much experimentation in which tests are tried out at the wrong level or at all three levels at once. While it is possible that a test may be devised to serve all three purposes, there is no *a priori* reason to assume it. The second major source of confusion is improper design of experiments. The value of a cancer diagnostic test for any purpose cannot be determined from a mass of data that provides test results for cancer patients without systematic regard for stage of disease, tissue site, pretreatment or post-treatment status or presence of other diseases. Controls in an experiment can be considered normal only after examination has failed to reveal any disease, and they must be comparable to the cancer group in regard to variables such as age and sex distribution. Where the control group has diseases other than cancer, systematic consideration must be given to each disease, to the stages at which the disease interferes with the cancer test and to the frequency with which diseases at these stages are associated with problems of diagnosis.

The demand for a cancer diagnostic test is so great that every new procedure is in danger of premature exploitation. One recently proposed procedure that may have some merit as a cancer test unfortunately was given unwarranted lay and professional publicity before its clinical validity could be determined. The result has been a widespread public and professional demand for its immediate application and, consequently, commercial exploitation, without the consent of the original investigators. In these circumstances, tragic misinterpretations of the test results are inevitable. One can best define the potential usefulness of any proposed cancer diagnostic test by first stating the conditions under which it may be applied and by conducting a planned experimental evaluation that will provide data to measure the performance of the test under these conditions. Such an approach will prevent waste and disappointment and is in keeping with the modern attitudes of the more critical investigators who are interested in this and other fields. When favorable, even exciting, observations are made by the researchers, they should be given opportunity to offer their data for careful scrutiny without fear of immediate misapplication or exploitation.

1. Hamburger, F.: Evaluation of Diagnostic Tests for Cancer: I. Methodology of Evaluation and Review of Suggested Diagnostic Procedures, Cancer **3**: 143 (Jan.) 1950. Dunn, J. E., and Greenhouse, S. W.: Principles and Criteria for the Development and Evaluation of Cancer Diagnostic Tests, unpublished data.

Current Comment

BOY SCOUT JAMBOREE

The Second National Boy Scout Jamboree will be held at Valley Forge Park, Pennsylvania, June 27-July 7. There will be 40,000 Scouts and leaders in attendance to celebrate the fortieth anniversary of scouting and to strengthen the arm of liberty with a panorama of scouting pageantry and skills. Small delegations of Scouts are expected from Canada, Latin America, Europe and Africa. The problems of the jamboree will be equivalent to those of a city with 40,000 population. Officials from the Valley Forge Park, Commonwealth of Pennsylvania, Philadelphia Metropolitan Area and the federal services have been requested to furnish assistance in matters pertaining to the solution of health and sanitation problems. Each Scout and leader is required to have a physical examination performed by a medical doctor and the results recorded on special forms provided for the jamboree. A successful smallpox vaccination within the past five years supported by a certificate is compulsory; tetanus

and typhoid inoculations are encouraged. All 40,000 Scouts and leaders will be given a recheck on their physical examination to ascertain whether the forms are properly filled out, to rule out contagious disease that may have developed since the original examination and to ascertain that each form has been signed by a medical doctor and not by a chiropractor, osteopath or other practitioner. It is the policy of the Boy Scouts of America to call on the medical profession for assistance and advice in all matters of health and safety. The Medical Society of Metropolitan Philadelphia will furnish volunteer physicians to assist with the rechecks. The jamboree will be organized into 32 sections, with 1,250 Scouts and leaders in each one. Three doctors will accompany each of the 32 sections. In each section there will be a health lodge or first aid station modestly equipped with supplies and six beds. The doctors will be responsible for the health and care of their section. Seriously ill Scouts will be hospitalized at nearby Armed Forces facilities. Scouts will prepare their own food, eliminating food handlers; contagious diseases should be at their annual low incidence. Numerous physicians and surgeons contribute their time and services to scouting. Those doctors who wish to volunteer their services or who wish to go to the jamboree as a sectional medical officer may contact the local Scout executive of their area for additional information. This is the type of leadership enjoyable to the younger citizens of this and other nations and deserves the continuing support of all communities, not just for a jamboree but throughout the year.

CHORIOCARCINOMA

Choriocarcinoma arises on the outside of the blastodermic vesicle which attaches the ovum to the maternal tissue. It may be associated with normal or abnormal pregnancy. Recently Park and Lees [1] in Edinburgh reported on the study of 23 cases observed by them and of 493 cases in the literature. They estimate the absolute incidence of choriocarcinoma to be 1 case in each 13,850 pregnancies, occurring between the ages of 20 to 40 years, most frequently at 25 to 29 years of age. The cells of the tumor being trophoblastic, that is, ectodermal tissue on the outside of the blastodermic vesicle, they produce a gonadotropic hormone which can be detected by suitable pregnancy tests. In a small proportion of cases spontaneous regression of a trophoblastic process may occur, especially if located in the vagina or the lungs. After the diagnosis is made, choriocarcinoma as a general rule ends in death on the average in about four months. Rarely spontaneous regression occurs, and in favorable cases it is possible that cure may follow removal.

1. Park, W. W., and Lees, J. C.: Choriocarcinoma; A General Review, with an Analysis of Five Hundred and Sixteen Cases, Arch. Path. **49**: 73 (Jan.); 205 (Feb.) 1950.

PROTECTIVE MEASURES IN THE TUBERCULOSIS LABORATORY

Although incomplete, proof is now available of many frequently unrecognized dangers in the laboratory. The fact that such dangers are not confined to the observable accident is borne out by research at Camp Detrick, Md. Bacterial aerosols are released during such common operations as the removal of stoppers from dilution bottles, removal of wet plugs from broth culture tubes and removal of inoculum from the vaccine bottle with a hypodermic syringe. Pipetting, pouring and vigorous agitation of dilution blanks produce bacterial aerosols.[1] In view of the increasing use of cultural methods and animal inoculations in the laboratory diagnosis of tuberculosis, the Tuberculosis Laboratory Unit, Communicable Disease Center, Public Health Service,[2] has formulated certain safety procedures, realizing that they may be partly empirical but with the thought that improvements and changes will be made in time. Among the recommendations are thorough instruction on aseptic technic, handling specimens, cultures and animals, self care and decontamination; exhaust hoods with ultraviolet light and sterilizers; medical and health programs; physical and roentgen examinations; tuberculin tests; illness and accident reports; rest periods; proper and careful use of equipment; proper handling of animals; determination of sources of contamination and ways of decontamination; provision for personal procedures such as removal of coats and use of cleaning and sterilizing agents; safety signs; no smoking; adequate lighting; shower facilities; first aid kits, and protection against cresols and streptomycin to avert sensitivities. In the past laboratory technicians and investigators in sanatoriums were usually former patients who had a certain amount of protection from arrested disease; but now, since laboratories in health departments and research centers are obtaining more of their personnel from the general public, the risk would appear greater. Much evidence indicates that tuberculin-negative persons should not handle virulent organisms. Since selection of tuberculin-positive workers is not always possible, advantage may be taken of whatever protection BCG vaccination affords as it becomes available.

HEALTH INSURANCE PLAN OF GREATER NEW YORK

Elsewhere in THE JOURNAL is an article on the Health Insurance Plan of Greater New York. It has been accepted for publication solely for the information of the readers of THE JOURNAL and not because the plan has any official recognition of the American Medical Association or any of its offices. In fact, some of the proposals of the plan are not in accord with interpreted principles for voluntary health insurance adopted by the House of Delegates of the Association.

1. Anderson, R. J.: Protection of the Laboratory Worker, editorial, Pub. Health Rep. **65**: 463, 1950.

2. Fish, C. H., and Spendlove, G. A.: Safety Measures in a Tuberculosis Laboratory, Pub. Health Rep. **65**: 466, 1950.

WASHINGTON NEWS

Health Insurance and Other Legislation

The Senate Labor and Public Welfare Committee is selecting a staff to handle a national survey of health insurance plans and state and local health services. In structure the idea is to make the staff as close to nonpartisan as possible, with a director acceptable to both Democrats and Republicans and assistant directors for each party. The survey must be completed by Feb. 1, 1951, so the material will be available when Congress again moves into the national health insurance question. . . . The next few weeks should tell the story on national health insurance for this session. There is no possibility of any bill of this nature being enacted, but there is a possibility of hearings on a group of noncompulsory health insurance bills. Representative J. Percy Priest (Democrat, Tennessee), chairman of the House health subcommittee, is understood to have promised to hold such hearings before Congress closes. The question is whether extensive or restricted hearings are desired. If hearings are not scheduled until July, the prospects are that not many witnesses will be heard. . . . Newspaper stories misinterpreted the stand taken by New York's Senator Herbert Lehman (D.). Addressing a New York group, Senator Lehman said he "never has and never will" favor socialization of hospitals or the medical profession, which some reporters assumed meant opposition to the Truman Plan. Actually, its sponsors maintain that the Truman Plan is not socialized medicine. Senator Lehman's office confirmed that he is not opposing the Truman Plan. A new statement by the Democratic National Committee takes the same line: "In order to avoid socialized medicine in the United States. . . ." is the way it introduces its endorsement of the Thomas-Murray-Dingell Bill (S. 1679). Legislatures of 13 states have passed resolutions advising Congress not to enact a national compulsory health insurance law. They are Alabama, Mississippi, Delaware, Massachusetts, Nebraska, Arkansas, Tennessee, Florida, Texas, Michigan, Maryland, Illinois and Utah.

With the House docket being cleared rapidly, the way may be opened for final legislative action on at least three important medical bills: S. 522 for support of local public health units, S. 1453 for aid to medical schools and S. 1411 for establishing school health services on a nationwide basis. (A. M. A. has supported passage of S. 522; it has not passed on the rewritten bill S. 1453, and it opposes the section of S. 1411 which provides for free treatment of children regardless of parents' ability to pay.) All these bills have passed the Senate. Whether they will be called up in the House depends largely on the wishes of the House leadership. However, if they are brought out on the House floor, it is likely they will have to be thrown open to amendment; this could mean radical changes in the legislation. These bills have progressed so far in the legislative mill that, under favorable conditions, they could become law on short notice.

Rehabilitation of Handicapped Persons

The question of how much money the federal government should spend to rehabilitate physically handicapped persons has been thoroughly discussed before two Senate subcommittees. Although discussions centered around two pieces of legislation which may be allowed to die when this Congress adjourns, the hearings turned official attention to the broad problem.

Expert witnesses spread facts before the Senators: One million and a half handicapped persons receiving no rehabilitation whatever; the grouping of the aged, the chronically ill and the handicapped persons in some state institutions with no thought of rehabilitation or even segregation; the phenomenal employment records of properly rehabilitated persons; their proved ability to pay back in federal income taxes $10 for every dollar the government spent on their rehabilitation; the economic loss through enforced idleness of partially handicapped persons; the prospect for the future, specifically that by 1980 there will be one aged, chronically ill or handicapped person for every wage earner unless something is done about the situation.

Dr. Howard Rusk, director of the Institute of Physical Medicine and Rehabilitation, New York University and Bellevue was the final witness on S. 2273, which proposes to center all rehabilitation work in the Federal Security Agency. Dr. Rusk addressed himself to the question of what to do about these persons. He said the country was properly rehabilitating less than 10 per cent of its physically handicapped and that one of the great problems was the shortage of personnel trained in this work, particularly physicians. "We have to go back to the medical schools," he told the Senators, "and teach more medical students these technics. Also, we have to see that they learn to get the same lift out of rehabilitating a physically handicapped person as they would out of diagnosing some obscure tropical disease." The other major obstacles to a successful program, he said, were lack of proper hospital and clinic facilities and ignorance on the part of the physically handicapped themselves as to their rights to treatment under federal and state laws.

The subcommittee is trying to decide whether to recommend turning over all this work to FSA, to shift it to the Labor Department or to create a special commission for the physically handicapped. Subcommittee Chairman Paul H. Douglas (Democrat, Illinois) indicated he was not too impressed with the assignment. Speaking of FSA and Labor he said: "They are two agencies struggling fiercely for possession of the body. . . . each insists on being boss. . . . just try to get government departments to work together . . . they are specialists in noncooperation with each other."

Senator Douglas is also a member of the other subcommittee concerned with S. 3102, which would help states supply educational facilities for physically handicapped children. Under the bill federal funds would be channeled into this work at the rate of $4,000,000 the first year, building up to $16,000,000 after three years. Senator Douglas said he does not expect this bill to reach the Senate floor this session.

Deaths of House Members

Two members of the House of Representatives whose names have figured in medical legislation died within the last two weeks. Representative John Lesinski, (Democrat, Michigan) died unexpectedly at his home in Dearborn, Mich. He was chairman of the Education and Labor Committee, which has handled certain fringe medical legislation. His successor as chairman is expected to be Representative Graham A. Barden (Democrat, North Carolina). It was Mr. Barden, incidentally, who sponsored a public-school-only aid bill, thereby blocking committee action on Mr. Lesinski's bill for assistance to public and private schools. This is considered one of the important factors in delaying further action on the school health services bill S. 1411. The other death was that of Representative William Lemke (Republican, North Dakota), a consistent advocate of legislation to forbid vivisection. His most recent bill on this subject, H. R. 857, still is before Congress.

Chiropractic Care

At a House Veterans' Affairs Committee hearing, the A. M. A. opposed recognition of chiropractic care by the Veterans Administration (H. R. 1512). The A. M. A. statement pointed out that, although the bill requires chiropractors to be graduates of an institution approved by the administrator, chiropractic is not taught in any university or college supported by public funds. The statement also noted that the theory of chiropractic does not recognize a relationship between bacteria and disease and that it ignores "our highly scientific and well established theories of etiology of diseases." The federal government, A. M. A. argued, should not be in the position of recommending to its disabled veterans a form of treatment which obviously is not the best.

ORGANIZATION SECTION

Official Notes

RESOLUTIONS TO BE PRESENTED TO HOUSE OF DELEGATES

The Secretary of the Association has been informed that the following resolutions will be introduced in the House of Delegates at San Francisco by delegates of the Ohio State Medical Association:

Resolutions on Single Membership Classification

WHEREAS, There is constantly growing confusion, misunderstanding and criticism among the members of the American Medical Association regarding Fellowship, and

WHEREAS, A classification of members known as Fellows is, in the opinion of many members, unnecessary, and

WHEREAS, The relationship between the American Medical Association and its members would be improved by establishing a single membership classification in order that all members would receive uniform benefits in return for their annual membership dues; therefore be it

Resolved, That the House of Delegates of the Ohio State Medical Association in session May 16, 17 and 18, 1950, favors a single membership classification in the American Medical Association, requests the Board of Trustees of the American Medical Association to prepare appropriate amendments to the Constitution and By-Laws and to submit the same to the House of Delegates for action, and recommends that serious consideration be given to formulating a feasible plan whereby each member would receive THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION as a part of his all-inclusive membership benefits; and be it further

Resolved, That Ohio's delegates to the American Medical Association are herewith instructed to present this resolution to the House of Delegates of the American Medical Association at the 1950 annual session in San Francisco.

Resolutions on Enforcement of Principles of Medical Ethics

WHEREAS, Chapter III, Article VI, Section 6, of the recently adopted revised Principles of Ethics of the American Medical Association reads:

"A physician should not dispose of his professional attainments or services to any hospital, lay body, organization, group or individual, by whatever name called, or however organized, under terms or conditions which permit exploitation of the services of the physician for the financial profit of the agency concerned. Such a procedure is beneath the dignity of professional practice and is harmful alike to the profession of medicine and the welfare of the people"; and

WHEREAS, The committee known as the "Hess Committee" reported to the American Medical Association House of Delegates in Atlantic City in June 1949, in detail, regarding the practice of medicine by hospitals; and

WHEREAS, The "Hess report" in one paragraph stated in explanation as follows: "Therefore, hospitals and medical schools cannot charge patients fees for medical services rendered by physicians even though the physicians are full time employees of an individual or institution"; and

WHEREAS, The "Hess report" was adopted by the American Medical Association House of Delegates and the Trustees of the American Medical Association were instructed to enforce the principles and obligations involved; and

WHEREAS, The House of Delegates of the American Medical Association in Washington in December 1949 reaffirmed its belief in and confirmed the principles stated in the "Hess report" and directed that action by the Trustees be deferred only until all legal requirements were met in order to insure that all actions taken shall comply with the law; and

WHEREAS, The Trustees of the American Medical Association are to report to the House of Delegates in June 1950 regarding this matter and the "Hess Committee" is to report its further study; therefore be it

Resolved, That the House of Delegates of the Ohio State Medical Association confirms the action of the American Medical Association House of Delegates regarding the reaffirmation of the principles of the so-called "Hess report"; and be it further

Resolved, That the House of Delegates of the Ohio State Medical Association requests the American Medical Association House of Delegates to expedite action and implement methods that will enforce Section 6, Article VI, Chapter III of the Principles of Medical Ethics without delay; and be it further

Resolved, That our delegates to the American Medical Association are hereby instructed regarding these desires and requested to work for their fulfilment.

NEW SERIES OF ELECTRICAL TRANSCRIPTIONS

The Bureau of Health Education announces the release June 15, 1950 of a new series of electrical transcriptions, entitled "Tea for Three."

Two of Chicago's outstanding radio personalities, Elizabeth Hart and her husband, Louis Roen, together with Dr. W. W. Bauer, Director of the Bureau, present a series of 13 tape-recorded interviews conducted informally without script. The ostensible excuse for the interview is that the doctor is invited by the Roens for tea for three in order to answer health questions which have arisen in the minds of the Roens and their friends.

Miscellaneous questions and answers are built around the central theme for each program. The principal topics are: (1) headache, (2) insomnia, (3) feet, (4) weight, (5) rheumatism, (6) relaxation, (7) teeth, (8) posture, (9) accidents, (10) colds, (11) exercise, (12) vision and hearing aids and (13) skin.

These programs were tape recorded in the studios of the National Broadcasting Company in Chicago and transferred to radio transcription disks in the Mutual Studios, New York. General and medical supervision and production were by Dr. W. W. Bauer; Harriet Hester of Marshall-Hester Productions was the editor. This is series 24 in the electrical transcription library of the Bureau of Health Education.

These programs will be available on and after release date to county medical societies, which will make the local arrangements for broadcasting. A supply of these disks will be sent automatically from the factory to the twelve state medical societies which are subcenters for distribution. Similar arrangements may be made by any state medical society. The Bureau of Health Education will furnish full information on request.

Coming Medical Meetings

American Medical Association, San Francisco, June 26-30. Dr. George F. Lull, 535 North Dearborn St., Chicago 10, Secretary.

American Association for the Surgery of Trauma, Salt Lake City, June 22-24. Dr. Charles G. Johnston, 1512 St. Antoine St., Detroit 26, Secretary.

American College of Chest Physicians, San Francisco, June 22-25. Mr. Murray Kornfeld, 500 N. Dearborn St., Chicago 10, Executive Secretary.

American College of Radiology, San Francisco, June 25. Mr. William C. Stronach, 20 N. Wacker Drive, Chicago 6, Executive Secretary.

American Dermatological Association, Jasper National Park, Alberta, Canada, June 18-22. Dr. Louis A. Brunsting, 102 Second Ave. S.W., Rochester, Minn., Secretary.

American Diabetes Association, San Francisco, Hotel Whitcomb, June 24-25. Dr. John A. Reed, 1 Nevins St., Brooklyn 17, Secretary.

American Heart Association, San Francisco, Fairmont Hotel, June 22-25. Dr. John J. Sampson, 1775 Broadway, New York 19, Secretary.

American Medical Women's Association, Carmel, Calif., June 20-22. Dr. Grace Talbott, 909 Hyde St., San Francisco 9, Secretary.

American Proctologic Society, Los Angeles, July 1-5. Dr. W. Wendell Green, 1838 Parkwood Ave., Toledo 2, Ohio, Secretary.

American Rheumatism Association, San Francisco, Fairmont Hotel, June 23-24. Dr. Charles Ragan, 620 W. 168th St., New York 32, Secretary.

American Society for the Study of Sterility, San Francisco, Sir Francis Drake Hotel, June 24-25. Dr. John O. Haman, 490 Post St., San Francisco 2, Secretary.

Association for the Study of Internal Secretions, San Francisco, June 23-24. Dr. Henry H. Turner, 1200 N. Walker St., Oklahoma City 3, Secretary.

Conference of Presidents and Other Officers of State Medical Associations, San Francisco, Palace Hotel, June 25. Mr. John E. Farrell, 106 Francis St., Providence, R. I., Secretary.

Medical Library Association, Boston, June 19-22. Miss Helen Hlavac, 209 East 23d St., New York 10, Secretary.

Montana State Medical Association, Bozeman, Gallatin County High School, July 9-12. Dr. Herbert T. Caraway, 115 N. 28th St., Billings, Secretary.

Western Association of Industrial Physicians and Surgeons, San Francisco, June 25. Dr. Christopher Leggo, C. & H. Sugar Refining Corp., Crockett, Calif., Secretary.

West Virginia State Medical Association, White Sulphur Springs, The Greenbrier, July 27-29. Mr. Charles Lively, P. O. Box 1031, Charleston 24, Executive Secretary.

International Meetings

International Anatomical Congress, Oxford, England, July 25-28. Secretary, Miss A. M. Maynall, Department of Human Anatomy, University Museum, Oxford, England.

International Association for the Prevention of Blindness, London, England, July 17-21. Prof. P. Bailliart, 47 rue de Bellechasse, Paris, France, Chairman.

International Cancer Research Congress, Paris, France, July 17-22. Secretariat, 6 Ave. Marceau, Paris 8, France.

International Congress of Ophthalmology, London, England, July 17-21. Mr. Keith Lyle, 45 Lincoln's Inn Fields, London W.C.2, England, Secretary.

International Congress of Radiology, London, England, July 24-28. Dr. J. W. McLaren, 45 Lincoln's Inn Fields, London, W.C.2, Secretary General.

International Pediatric Congress, Zurich, Switzerland, July 24-28. Dr. L. Emmet Holt Jr., 477 First Ave., New York City 16, Secretary-General.

International Union Against Venereal Diseases, Zurich, Switzerland, July 29-Aug. 2. Dr. A. Cavaillon, Institut A. Fournier, 25 Blvd. St. Jacques, Paris 14em., France, Secretary.

GOVERNMENT SERVICES

Navy

Offer 200 Internships to 1951 Graduates

The Surgeon General announces that 200 rotating internships in naval hospitals will be available to qualified medical school students who will graduate in 1951. Applications for the naval internships will be accepted beginning Dec. 19, 1950, in accordance with the Association of American Medical Colleges' cooperative plan for appointment of interns. However, a naval intern must meet all requirements for commission in the Medical Corps of the Naval Reserve; it is necessary, therefore, that applications for Naval Reserve commissions be submitted prior to December 19. Prospective applicants should visit the Naval Officer Procurement office nearest their homes as soon as possible and apply for a Naval Reserve commission, so that this application may be processed well in advance of Feb. 20, 1951, the deadline for notification of successful internship candidates. Internship candidates will be notified of their selection or nonselection for the program. Selected candidates will be notified by telegram not earlier than Feb. 20, 1951. At the same time, they will be notified of the naval hospital to which they will be assigned for their intern year.

Candidates for naval internship are selected from volunteers who agree to serve a minimum of 24 months of active duty from the date of commencement of their intern training. Appointees are commissioned lieutenant (junior grade) in the Medical Corps of the Naval Reserve. On graduation from medical school they receive the pay and allowance of their rank while serving as interns and on active duty. When ordered to other duty on completion of internship, they also qualify for an additional compensation of $100 per month. Other benefits include a $250 uniform allowance, reimbursement of transportation cost for dependents and household effects from their home to station of duty, retirement benefits and an opportunity for later advanced professional training. Information concerning the program may be obtained from any office of Naval Procurement or the Personnel Division, Bureau of Medicine and Surgery, Navy Department, Washington 25, D. C.

Training for Reserve Entomologists and Malariologists

A two week training course for Naval Reserve officers of the Medical Service Corps (Allied Medical Science) who are entomologists and malariologists will convene on the first and third Wednesday of each month from July 1950 to June 1951, at the Navy's Malaria and Mosquito Control Unit 1, U. S. Naval Air Station, Jacksonville, Fla. This program will provide an opportunity for a number of Naval Reserve personnel to receive two weeks' annual training duty. The curriculum has been designed to present the latest information concerning the needs, methods and operation of insect and pest control problems. Those eligible are inactive Naval Reserve entomologists and malariologists residing in the 1st, 3rd, 4th, 5th, 6th, 8th and 9th naval districts and the Potomac River Naval Command. Requests for this annual training duty should be submitted to the local naval district commandant.

Certified by Boards

Comdr. Lester J. Pope (MC, USN) has the honor of being the first certified gastroenterologist in the Naval Medical Corps. He has been certified also by the American Board of Internal Medicine.

The following officers have been certified by American boards:

Comdr. Melville M. Driskell, American Board of Internal Medicine.
Comdr. H. V. O'Connell, American Board of Pathology in Pathologic Anatomy.
Comdr. Ralph Volk, American Board of Internal Medicine.

Lecture at Medical Center

The seventh and final lecture in the current series of guest lectures held at the Navy Medical Center, Bethesda, Md., was presented May 29 by Dr. Thomas M. Durant, professor of clinical medicine, Temple University Medical School, Philadelphia. His subject was "Dyspnea: Its Significance and Interpretation." These lectures are open to members of local medical societies and medical officers of other governmental services. They will be continued in the fall.

National Board of Medical Examiners

Dr. Howard Thomas Karsner, medical research advisor to the Surgeon General and to the director of the Research Division of the Navy's Bureau of Medicine and Surgery, was selected president, for a term of three years, of the National Board of Medical Examiners at its recent annual meeting. At the same meeting Rear Admiral H. L. Pugh (MC) was reelected as a member of the Executive Committee of the National Board of Medical Examiners.

Veterans Administration

Neuropsychiatric Hospital at Van Nuys, Calif.

The 1,000 bed neuropsychiatric hospital authorized for the Veterans Administration in the Los Angeles area will be built on the site of the present VA hospital at Van Nuys, Calif. Work on the new hospital will be pushed as rapidly as possible. Clearing of the Van Nuys site of temporary buildings will be started as soon as patients and equipment in the hospital can be evacuated. The patients will be moved to the naval hospital at Long Beach, Calif., which was taken over by the VA on June 1. In addition to the most modern facilities for neuropsychiatric treatment, the new 1,000 bed hospital will have a complete general medical and surgical section, which will include a staff especially qualified to give emergency treatment to paraplegic patients. Their services will be available to eligible paraplegics living in the San Fernando Valley. The decision to locate the new hospital on the Van Nuys site is said to have been based on careful studies of all possibilities and was reached on the basis of service to sick and disabled veterans and economy of expenditure.

Nineteen Million Veterans

A statistical summary of VA activities on April 30 showed a veteran population of 19,061,000, of which 15,358,000 were World War II veterans. The hospitalized veterans with service-connected disabilities totaled 36,454 and the hospitalized veterans with non-service-connected disabilities, 70,616. Applicants eligible for hospitalization, whose admission had not been scheduled, totaled 27,369.

Personal

Dr. Clifton H. Smith and Dr. John H. Hood will become managers of the VA hospitals at Augusta and Atlanta, Ga., respectively. Dr. Smith is a graduate of the University of Vermont College of Medicine and has been with the VA for many years. Dr. Hood, who has been with the VA since 1930, except for three years during World War II when he served in the Army Medical Corps, is a graduate of the University of Georgia Medical School (1925).

Public Health Service

Electrokymographic Conference

The first Electrokymographic Conference was held May 25-26 at the National Institutes of Health, Bethesda, Md. The electrokymograph, a new instrument for the study of cardiovascular diseases, was developed by Public Health Service research investigators working in cooperation with Temple University Medical School research investigators. Dr. M. J. Oppenheimer of Temple University was chairman of all sessions except the closing session, when Dr. R. Morgan of Johns Hopkins University was in charge. Speakers from Philadelphia were: Drs. G. C. Ring, Joan Long, W. E. Chamberlain and George Henny, all from Temple University, and Dr. Calvin Kay from the University of Pennsylvania Hospital. Public Health Service personnel addressing the conference were: Drs. Freeman Rawson Jr. and Victor A. McKusick from the Baltimore Marine Hospital and Drs. Wm. F. Oliver and B. R. Boone and Mr. F. W. Noble from the National Heart Institute. Other speakers were: Dr. S. Dack, Mount Sinai Hospital, New York City; Dr. H. E. Heyer, Southwestern Medical College; Dr. A. Luisada, Chicago Medical College; Dr. Philip Samet, New York City; Dr. Frank Barrera, University of Cuba, and Dr. A. Henry Clagett, Wilmington, Del.

Short Laboratory Courses

Three short courses in the laboratory diagnosis of parasitic diseases will be given by the Communicable Disease Center of the Public Health Service in Atlanta, Ga. The first course was held June 12-16. The course is designed for laboratory directors and others performing similar work to familiarize them with the available diagnostic technics and to enable them to better evaluate laboratory results. Laboratory Diagnosis of Parasitic Diseases will be given in two parts: part 1, Intestinal Parasites, will be held September 18-October 6; part 2, Blood Parasites, will be held October 9-October 27. These courses are designed to develop proficiency of laboratory personnel actually performing examinations or determining final identification.

Applicants from laboratories of state and local public health departments will be given first consideration for the courses, but applicants from hospitals and nonprofit laboratories will be eligible when vacancies exist. There is no tuition charge or laboratory fee for the course, but travel and living expenses must be arranged and paid by the individual or his employer. Applicants are requested to apply well in advance. Information forms may be obtained from the Laboratory Division, Communicable Disease Center, 291 Peachtree Street, N. E., Atlanta, Ga.

Census of Mental Patients

At the end of 1947 there were about 675,000 patients resident in all mental institutions, or 471.8 persons out of every 100,000 in the civilian population, according to a report released by the National Institute of Mental Health. The census includes patients in 810 public and private hospitals and institutions for the metally ill and handicapped (plus data on patients in hospitals of the Veterans Administration and other federal hospitals) including 203 public and private institutions for mental defectives and epileptics. More than one million persons were reported to have received treatment in these institutions during 1947.

Out of the total resident patient population in all mental institutions at the end of 1947, close to 550,000 (384.1 per 100,000 population) were in hospitals for mental disease and in the psychiatric wards of general hospitals and about 125,000 (87.7 per 100,000 population) were in institutions for mental defectives and epileptics. In 1947 there were 1,592 full time staff physicians with a patient load per staff physician of about 276 patients. This is about double the patient load of 129 patients which would obtain if the standards of the American Psychiatric Association were met. There is also a shortage of physicians with psychiatric training in these institutions. Of 1,592 full time staff physicians, 570, or 35.8 per cent, were members of the American Psychiatric Association and 242, or 15.2 per cent, were specialists certified by the American Board of Psychiatry.

The report includes an introduction tracing the history of the collection of mental health statistics in the United States and gives information on additional data available on request from the National Institute of Mental Health. Copies of the report may be purchased for 50 cents from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C.

Midwestern Communicable Disease Center

The Public Health Service has established in Kansas City, Mo., an office of midwestern communicable disease center to furnish states of the surrounding area with a variety of public health facilities not previously available on a large scale. Dr. R. A. Vonderlehr, medical director in charge of the communicable disease center, with headquarters in Atlanta, said, "The office of midwestern CDC services has two major purposes. It furnishes assistance to state and local health departments and to Public Health Service regional offices in the control of communicable diseases. It also conducts field research on special important disease problems." The diseases being studied include encephalitis, fungus infections, malaria, rat-borne diseases, rabies, brucellosis, Q fever and diarrheal diseases. Another disease problem under investigation at the Office of Midwestern CDC Services is that of histoplasmosis, a fungus disease of the lungs, which frequently is mistaken for tuberculosis. The Public Health Service release stated, "It is estimated that in the area between Kansas and Ohio there may be as many as 15,000,000 persons infected with the disease."

GS-16 Civil Service Positions

The National Institutes of Health was granted 10 of the 300 positions recently assigned to the new GS-16 classification by the Civil Service Commission. The 400 new top administrative classifications of GS-16, 17 and 18 were established under the Classification Act of 1949. The beginning salary for GS-16 positions is $11,200. The positions placed in the new classification are:

EXPERIMENTAL BIOLOGY AND MEDICINE INSTITUTE
Endocrinologist
Biophysicist (Radiation Physics)
Steroid Chemist

MICROBIOLOGICAL INSTITUTE
Medical Officer (Immunology)
Medical Officer (Virologist)

NATIONAL CANCER INSTITUTE
Biochemist
Scientific Director

NATIONAL HEART INSTITUTE
Biochemist

NATIONAL INSTITUTE OF MENTAL HEALTH
Director of Clinical Research
Physiologist (Neurology)

The first of the positions to be filled was that of biochemist at the National Cancer Institute. Dr. Jesse P. Greenstein, formerly chief of the Biochemistry Section of the National Cancer Institute, was appointed to the position soon after the Civil Service Commission approved the 10 new grades.

Appointment of Dr. Sunderman

Dr. F. William Sunderman, who has joined the staff of the Communicable Disease Center of the Public Health Service, will be in charge of the clinical pathology section of the Laboratory Services Division and will be concerned with formulating standardized methods in laboratory medicine. Formerly he was professor of experimental medicine and clinical pathology in the Postgraduate Medical School of the University of Texas and director of clinical research of the M.D. Anderson Hospital for Cancer Research in Houston. He has also held posts with the Office of Scientific Research and Development, Brookhaven National Laboratory and Los Alamos Atomic Energy Laboratory. Dr. Sunderman received his medical degree from the University of Pennsylvania. He is president-elect of the American Society of Clinical Pathologists, a trustee and vice president of the American Board of Pathology and a former governor of the College of American Pathologists.

MEDICAL NEWS

(Physicians will confer a favor by sending for this department items of news of general interest: such as relate to society activities, new hospitals, education and public health. Programs should be received at least two weeks before the date of meeting.)

ARKANSAS

State Medical Election.—The Arkansas Medical Society at its annual meeting in April selected the following officers: Drs. Earle H. Hunt, Clarksville, president; Charles R. Henry, Little Rock, president-elect; Frederick H. Krock, Fort Smith, Ross E. Fowler, Harrison, and George L. Hardgrave, Clarksville, first, second and third vice presidents, respectively; Daniel H. Autry, Little Rock, secretary, and William R. Brooksher, Fort Smith, delegate to the American Medical Association with Joseph F. Shuffield, Little Rock, as alternate.

CALIFORNIA

Course in Diagnosis and Therapy of Cancer.—The University of California has announced a postgraduate course in the diagnosis and therapy of cancer, including clinical surgery, radiation therapy and endocrine therapy, to be presented July 17-22 at the General Medical and Surgical Hospital, Veterans Administration Center, Los Angeles. It is limited to graduates of medical schools approved by the Council on Medical Education and Hospitals of the American Medical Association. Details may be obtained from the Office of Medical Extension, University Extension, University of California, Los Angeles 24. The fee for the course is $100.

ILLINOIS

Personal.—Dr. Roland I. Pritikin, Rockford, has been named official delegate to the Sixteenth International Congress on Ophthalmology meeting in London, England, July 17-21. He will have a slide exhibit at the congress on "Bacteriology of Ocular Infections in the Midwest." He is also serving as official delegate for the Association of Military Surgeons at the Congress. Dr. Pritikin is a colonel in the Medical Corps of the U. S. Army Reserve.

Chicago

Society News.—The new officers for the Chicago Society of Allergy, elected May 15, are as follows: Drs. Townsend B. Friedman, president; Theron G. Randolph, president-elect and Milton M. Mosko, secretary-treasurer.

Grant for Study of Liver Diseases.—The Hektoen Institute for Medical Research of the Cook County Hospital has received a grant of $12,300 from the Dr. Jerome D. Solomon Memorial Research Foundation. This sum represents the fourth renewal of a grant for the study of liver diseases carried out by Dr. Hans Popper, scientific director of the institute, and co-workers.

The Basil Harvey Fund.—The Basil Harvey Fund has been established at the University of Chicago by a group representing Dr. Basil C. H. Harvey's former students, colleagues and friends to honor his almost half-century of service to medical education. This will be a revolving loan fund for both undergraduate and postgraduate students of medicine. Dr. Harvey came to the University of Chicago and Rush Medical College in 1901 as assistant in anatomy, after three years in general practice. In 1917 he became professor while serving as major in the medical department with the AEF in France, where he was with the 13th Base Hospital (Presbyterian Hospital Unit). Dr. Harvey was appointed dean of the College of Science in 1921, dean of medical students in 1923 and dean of students in the Division of Biological Sciences in 1931, the last position he held until his retirement in 1940 and to which he returned in 1943 during the second World War.

KANSAS

Dr. Proud to Head Department.—Dr. G. O'Neil Proud, instructor in the department of otolaryngology at Washington University School of Medicine, St. Louis, Mo., has been appointed chairman of the department of otolaryngology at the University of Kansas School of Medicine, Kansas City, effective July 1. Dr. Sam E. Roberts, chairman of the department since 1928, who has been made chairman emeritus, will devote his time to private practice. Dr. Proud received his medical degree from Washington University in 1939 and has served on the staffs of St. Louis Children's and Barnes hospitals. He is a lieutenant in the U. S. Naval Reserve.

KENTUCKY

Medical Seminar.—The third annual Medical Seminar of the University of Louisville School of Medicine was conducted June 12-13 at the Brown Hotel. Dr. Herbert L. Clay Jr., director of postgraduate training, was in charge of arrangements. The program was planned by the university in cooperation with the Kentucky State Medical Association, the Jefferson County Medical Society, the American Red Cross, the National Foundation for Infantile Paralysis and the American Academy of General Practice.

Anniversary of Blood Center.—The first anniversary of the opening of the Regional Blood Center in Louisville was observed May 20 with ceremonies in Lincoln Park honoring the 22,000 blood donors from 28 counties in Kentucky and Southern Indiana. Certificates were awarded to 70 firms and organizations which have met voluntary blood quotas and to 20 which have doubled their quotas. The speakers were Admiral Ross McIntyre, national administrator of the Red Cross blood donor program; Major Anthony C. McAuliffe, commander of the 101st Airborne Division at Bastogne; Major Gen. Raymond W. Bliss, U. S. Army surgeon-general, and Dr. Elmer L. Henderson, Louisville, President-Elect of the American Medical Association. After the ceremonies open house was held at the Blood Center and guests were honored at a reception at the home of Mr. Wilson Wyatt, former mayor of Louisville.

LOUISIANA

History of Medicine Awards.—Student awards of the History of Medicine Society of Tulane University, New Orleans, were presented at the annual banquet May 12. The I. I. Lemon Award for the best student discussion was presented to Mr. Lewis Post for his paper on Galen. The Rudolph Matas Award for the best paper was given to Mr. Richard Smith for his paper on Abraham Jacobi. A personal award by Dr. B. Bernard Weinstein was given to Mr. James Lancaster in appreciation of his paper on Sir William Osler. The guest speaker at the banquet was Dr. Alfonso Alvarez Bravo, professor of gynecology, University of Mexico School of Medicine, México, D. F., who spoke on the history of gynecology in Mexico.

MICHIGAN

Panzner Memorial Clinic Tour.—On June 8 the Providence Hospital staff observed the first annual Edward J. Panzner Memorial Clinic Tour, in memory of the late Dr. Panzner, who was senior surgeon at the hospital for many years. The staff plans to go every year to a different medical center as a group.

High School Cancer Education Program.—The Genesee County Unit of the American Cancer Society, with the cooperation of the County School Commissioner, the superintendent of the Flint schools, the county medical society and the Flint and county health departments, carried out a cancer education program in the high schools during the present school year. It has been directed at both pupils and science teachers in all public and parochial high schools of the county. During November and December 1949 physicians addressed about 9,000 high school pupils on the subject of cancer. Time was allowed for a question period. A seminar for high school science teachers and school administrators was held in Flint at weekly intervals for five two-hour meetings. Representatives of city and county health departments, the Visiting Nurses Association and other health and welfare organizations attended. A packet of books, journals and pamphlets on cancer for each high school library is being furnished at the Genesee County Unit of the American Society, and a manual for use by the teachers is in preparation by the Cancer Control Committee of the state medical society.

NEBRASKA

Dr. Alan Moritz to Receive Honorary Degree.—The University of Nebraska College of Medicine, Omaha, will confer the honorary degree of Doctor of Science on Dr. Alan R. Moritz, professor of legal medicine at Harvard University, Boston, from 1937 until 1949 and now professor and director

of the Institute of Pathology at Western Reserve University School of Medicine, Cleveland. Dr. Moritz received his Bachelor of Science degree in 1920, M.A. in 1921 and M.D. in 1923 from the university. He will be cited as follows: "Alan Richards Moritz: Native son of Nebraska, inspiring university professor, prolific author, distinguished leader in legal medicine whose achievements have greatly advanced sound application of medical knowledge to the administration of justice and furtherance of safety and health to the lasting benefits of his fellow citizens, and alumnus whom we honor today."

NEW HAMPSHIRE

Dr. Colby Goes to Portland.—Dr. Edward W. Colby, Concord, director of Communicable Disease Control, resigned from the State Health Department May 12 to accept the position of city health officer of Portland, Maine. He has been with the state health department since 1942.

NEW YORK

Blood Vessel Bank.—The New York Heart Association and its affiliate, the New York Society for Cardiovascular Surgery, have jointly announced the establishment of a central cooperative blood vessel bank making possible replacement of diseased or abnormal sections of human arteries. It was established last July by a $15,000 grant from the heart association and is now occupying temporary facilities at New York Hospital, Cornell Medical College. It is soon to be moved to permanent quarters at Bellevue Hospital.

Dr. Hellman to Head Department.—Dr. Louis M. Hellman has been appointed as the first full time professor of obstetrics and gynecology at the State University Medical Center at New York City College of Medicine, which was recently reorganized by merger of Long Island College of Medicine with State University of New York. Dr. Hellman received his medical degree in 1934 from Johns Hopkins University School of Medicine, Baltimore, and since 1945 has been associate professor of obstetrics at his alma mater. He will join the faculty of the state university August 1. During the war he served as lieutenant commander in the U. S. Naval Reserve. Dr. Hellman will succeed Dr. Charles A. Gordon as professor and executive officer of the college department and will have his offices at Kings County Hospital, where he will be director of the college division of obstetrics and gynecology.

New York City

Exhibit on Cortisone and ACTH.—The New York Academy of Medicine Library has prepared an exhibit of as much of the recent literature as possible concerning cortisone and pituitary adrenocorticotropic hormone (ACTH). It has prepared a bibliography of this material, which may be secured by physicians on request. The address is 2 East 103rd Street, New York 29.

Museum of Health.—The American Museum of Health, on the campus of Hunter College, New York, opened its doors to the public in April. Among the exhibits are the models, Transparent Man, Big Ear, Voice Organ, and the Blood System, which were displayed at the World's Fair in 1938-1939. Said to be the largest of its kind in the world, the museum is sponsored by the New York Academy of Medicine, Columbia and Harvard School of Public Health, Johns Hopkins University and others. Admission is free.

Test for Mental Maturity.—The Institute of Psychological Research of Teachers College, Columbia University, has been awarded a grant of $4,965 by the Coordinating Medical Council for Cerebral Palsy of New York City to complete a standardized test for determining the mental maturity of children with cerebral palsy. Work under the new grant will be directed by Irving D. Lorge, Ph.D. He will be assisted by Dr. Lucille H. Blum, psychologist-consultant at the cerebral Palsy Pre-School Center of the Lenox Hill Hospital, and Bessie B. Burgemeister, Ph.D., research psychologist at the Neurological Institute in New York City. The Coordinating Medical Council for Cerebral Palsy of New York City was organized in 1947 to meet the need for coordinated effort in behalf of persons with cerebral palsy.

NORTH CAROLINA

University Appointment.—Dr. Arthur J. Patek Jr., assistant clinical professor of medicine at Columbia University College of Physicians and Surgeons, New York, was appointed professor of medicine at Western Reserve University School of Medicine and director of medicine at Mount Sinai Hospital, Cleveland, effective May 1. After receiving his degree from Harvard Medical School, Boston, in 1930, he served an internship in medicine at University Hospitals in Cleveland. Establishment of the position of director of medicine on a full time basis at Mount Sinai Hospital is in line with affiliation of the hospital with the school of medicine.

OHIO

Public Health District Offices.—The Ohio Department of Health is setting up five district offices to decentralize its consultation services. Offices for the southeast district are at Athens; the northeast district, Cuyahoga Falls; northwest district, Bowling Green; central district, Delaware, and southwest district, to be selected. The ultimate goal of the department is to staff district offices with medical officers, engineering and sanitation consultants, public health nursing consultants, health education consultants, records and administrative consultants or personnel for any other special assistance which might be needed. No direct services will be rendered through district offices. Their functions will be purely that of consulting with local health departments.

State Medical Election.—The following officers were elected at the recent annual meeting of the Ohio State Medical Association in Cleveland: Dr. Ernest O. Swartz, Cincinnati, president; Dr. Fred W. Dixon, Cleveland, president-elect, and Dr. Henry P. Worstell, Columbus, treasurer.

Personal.—Dr. Maurice Levine, head of the department of psychiatry at the University of Cincinnati College of Medicine, has been elected president of the American Delegation of 300 psychiatrists who will attend the first International Congress of Psychiatry September 18-26 in Paris, France. While at the congress Dr. Levine will give a seminar on the development of American psychiatry in the past 20 years.

OKLAHOMA

University Appointment.—Dr. James P. Dewar Jr., New York, has been appointed assistant professor of pathology at the University of Oklahoma School of Medicine, Oklahoma City, and director of surgical pathology at the University Hospital. Dr. Dewar received his M.D. degree from McGill University Faculty of Medicine, Montreal, in 1939. After service in World War II he became a fellow in pathology at the New York state laboratory and then at Bender Laboratory.

PENNSYLVANIA

Society News.—The Montour County Medical Society of Danville presented a postgraduate seminar May 19 at the George F. Geisinger Memorial Hospital and Clinic in Danville. Guest speakers included: Dr. Robert Kennedy, clinical professor of surgery, New York, and Drs. Julian Johnson and Harvey Blank, Philadelphia.

Philadelphia

Eliason Memorial Fund.—An Eldridge L. Eliason Memorial Fund has been started by the Aid Association of the Philadelphia County Medical Society to memorialize one of Philadelphia's surgeons and to benefit doctors and their families who are in need. All associates, students, friends and patients are invited to contribute. Checks should be made out to Eldridge L. Eliason, M.D., Memorial Fund and mailed to Jesse T. Nicholson, M.D., treasurer, The Aid Association of the Philadelphia County Medical Society, 330 South 9th Street, Philadelphia 7.

History of Medicine Lectureship.—Woman's Medical College of Pennsylvania has received a bequest of $10,000 from the estate of William Edward Mead, to be combined with a bequest of a like amount from the estate of his wife, the late Dr. Kate Campbell Hurd-Mead of Haddam, Conn., "the income to be used toward a lectureship on the history of medicine to be known as the Kate C. Hurd '88 Fund." In addition, Dr. Mead left her library of books and pamphlets on the History of Women in Medicine to the college. Dr. Mead also directed that $20,886 be given to the Alumnae Association of the Woman's Medical College of Pennsylvania "to be held as the Kate Campbell Hurd '88 Fund. The annual income of this fund is to be expended at the direction of the officers of the association."

Pittsburgh

Appointments at School of Public Health.—The Graduate School of Public Health, University of Pittsburgh, has appointed Dr. Francis S. Cheever, Boston, as professor of microbiology; Mr. William H. Ray as research associate in the department of occupational health, and Gladys E. Sather, M.Ph., as research associate in the department of epidemiology and bacteriology. Dr. Cheever received his M.D. degree in 1936 from Harvard Medical School, Boston. He will continue his research in bacteriology, virology and immunology, will assist in teaching epidemilogy and will carry the responsibility of organizing and teaching courses in microbiology and

immunology. Mr. Ray for the past six years has been in the Health Physics Division of Oak Ridge (Tenn.) National Laboratory. Miss Sather received her Master of Public Health degree from the University of California, San Francisco. She came to the School of Public Health from the university, where she was principal technician at the Hooper Foundation.

GENERAL

Sectional Congress of Surgeons.—A meeting of sections of the Southeastern Surgical Congress from the District of Columbia, Maryland, Virginia and West Virginia will be held at the Greenbrier, White Sulphur Springs, W. Va., July 13-15. Dr. Carl C. Howard, Glasgow, Ky., president of the Southeastern Surgical Congress, will speak on "Open Reduction of Fractures." Rush D. Holt of Weston, former U. S. Senator from West Virginia, will speak at the banquet Saturday evening on "Fable of the Free Lunch." Separate business meetings of the four state sections will be held at noon on July 14.

Traffic Fatalities Decrease in Small Cities.—By going through the entire year of 1949 without a single traffic fatality, 504 cities with populations between 5,000 and 10,000 have won places on the Honor Roll of the National Traffic Safety Contest. The National Safety Council, which conducts the contest, announced that this makes an increase of 103 from the number on the 1948 Honor Roll. Hobart, Okla., which state records show has never had a traffic death since its incorporation in 1901, maintained its perfect record in 1949. The council does not know of any other city in the population group which equals this record.

Pan American Leprosy Conference.—The Third Pan American Conference on Leprosy will be held at Buenos Aires, October 8-14, under the auspices of the Argentine government. Organization plans follow those of the second conference held in Rio de Janeiro in 1946. Governments of the American Republics will be invited to send official delegations, and the Pan American Sanitary Bureau, International Leprosy Association, and selected institutions to send accredited representatives. Topics are: (1) classification of subtypes; (2) status of leprosy reactions; (3) reversibility of clinical types and the lepromin reaction, and (4) social assistance to patients and their families. For information address the Organizing Committee, Ayacucho 1477, Buenos Aires.

Congress on Amebiasis.—An international congress on amebiasis and other intestinal parasites is being organized in Chatel-Guyon, France. The meeting will take place on September 15-16, 1950. The subject under discussion will be in four sections:

Scientific Section, Pathologic Anatomy of Parasitic Disease in the Adult and the Child.
Medical Section, Clinical Forms of Parasitic Disease in the Adult and the Child.
Therapeutic Section, Chemotherapy, Surgery, etc.
Hygiene, Public Health Section, Worldwide distribution and diffusion; part played by displaced persons; social consequences of parasitic infections.

Information may be obtained from: Secretariat General Congres International de l'Amibiase, Grands Thermes, Chatel-Guyon (Puy-de-Dome) France.

Urge Improvement in Cancer Statistics.—The World Health Organization's Expert Committee on Health Statistics, following a session at Geneva in April, recommended that more detailed and precise statistics on cancer be gathered from all countries as a means of obtaining data for research and other aspects of the fight against cancer. So far, says the committee's report, most investigations of cancer statistics have been based on death certificates, but recent progress in treatment has made that method inadequate for research purposes. More information is needed regarding diagnosis and the prevalence of cancer according to the site of the tumor, as well as recovery and survival rates resulting from different treatment. The committee suggested basic definitions and proposals for evaluation of cancer morbidity among the general population as well as among special population groups according to social, economic and occupational factors. Suggestions were also made regarding adequate statistics on results of cancer treatment on a unified basic nomenclature.

Fellowships to Aid in Training the Handicapped.—Eighteen persons working in the field of rehabilitation and employment counseling for the handicapped have been awarded fellowships to a special training course by Alpha Gamma Delta, International Women's Fraternity and the National Society for Crippled Children and Adults. The four week course, designed to help meet the employment problems of cerebral palsied and other severely handicapped workers, will be given at the Institute of Rehabilitation and Physical Medicine of the New York University-Bellevue Medical Center, under the auspices of the New York University School of Education May 22-June 16. The New York program is the third such course to be offered under the joint sponsorship of Alpha Gamma Delta and the national society. In the two previous courses 29 persons from 24 states and Canada were trained for counseling and placement work with the handicapped. The fellowship winners, on completion of the course, will return to their places of employment to apply their specialized knowledge and technics to the counseling and employment problems of the handicapped.

U. S. Contributions to Needy Countries.—Nearly $24,000,000 in money, materials and services was contributed by 118 United States national organizations for educational reconstruction in war-devastated and other needy countries in 1949, according to a report made to the U. S. National Commission for the United Nations Educational, Scientific and Cultural Organization, issued April 15. This amount does not include the contributions made by many other national organizations. The reports tabulated generally were from organizations most closely associated with the work of UNESCO. According to George N. Shuster, president of Hunter College and chairman of the Educational Reconstruction Committee, they show that many of the organizations which were most active in supplying food and clothing to war-devastated countries immediately after the end of the war now are concentrating on educational reconstruction and equipment and on scholarships and training facilities. Among the countries receiving major assistance were Greece, more than $2,000,000; Germany, about $1,500,000; China, about $2,882,000, and India, $1,125,000. European countries received over $8,000,000; the Near East, over $5,000,000, most of which went to Israel; Asia and the Pacific countries, $5,176,000, and the Latin-American countries, about $350,000.

WHO Committee on Unification of Pharmacopoeias.—The World Health Organization's nine member Expert Committee on the Unification of Pharmacopoeias, under the chairmanship of Dr. Charles H. Hampshire of London, opened a nine day session April 20 at the U. S. Pharmacopoeial Building in New York. Among subjects discussed were plans for the publication of a new international pharmacopeia under auspices of the World Health Organization, nonproprietary names of drugs, a table of doses suitable for children, new methods of analysis, control of drugs, regulations on drugs in different countries, advertising and labeling of drugs, the preparation of a questionnaire to be sent to governments for information on the control of drugs, and relations with other Expert Committees of the organization in such fields as addiction-producing drugs. The following members, who serve as experts rather than as representatives of governments, are Dr. Hampshire, secretary, British Pharmacopoeia Commission, London (chairman); Prof. H. Baggesgaard-Rasmussen of the Danish School of Pharmacy and member of the Danish Pharmacopoeia Commission, Copenhagen; Prof. E. Fullerton Cook, chairman of the commission of the Revision of Pharmacopoeia of the United States, Philadelphia; Prof. I. R. Fahmy of Fouad University, Cairo, Egypt; Prof. H. Flueck, member of the Swiss Pharmacopoeia Commission, Zurich; Prof. R. Hazard of the University of Paris and member of the Commission of the French Pharmacopoeia; Prof. van Os of the University of Groningen, Netherlands, and chairman, of the Netherlands Pharmacopoeia Commission; G. A. Morrell, Ph.D., director, Food and Drugs Division, Department of Health and Welfare, Ottawa, Canada, and Dr. Mayoral Pardo, professor at the Escuela Militar de Medicina, México, D. F.

Life Insurance Awards for Research on Heart Disease.—The life insurance companies of the United States and Canada will give $670,000 to medical schools and other research centers during 1950 for the study of heart disease and the training of research scientists. The awards were approved May 12 at the annual meeting of the Life Insurance Medical Research Fund and bring to $3,200,000 the total amount of money given out by the fund since it was organized late in 1945. Recipient of the Lasker Award from the American Public Health Association last year for its contributions to the advancement of medical science and public health, the Life Insurance Medical Research Fund is now being supported by 147 life insurance companies. Included in the awards approved by the fund's Board of Directors is $548,000 to be used as grants-in-aid for research programs, and an additional $122,000 which will go to 34 research fellows. The larger sum of $548,000 will be granted to 36 medical schools and other research centers and will support 51 different research programs. The value of the individual grants-in-aid range from several thousand dollars to $21,000. New members of the Advisory Council are Wallace O. Fenn, Ph.D., of the University of Rochester, N. Y., Dr. Thomas

Francis Jr. of the University of Michigan School of Public Health, Ann Arbor, and Dr. Oliver H. Lowry of Washington University School of Medicine, St. Louis. Dr. Cyril N. H. Long of Yale University School of Medicine, New Haven, Conn., was chosen as chairman of the council for the coming year. The new medical directors' representative is Dr. Earl C. Bonnett of the Metropolitan Life Insurance Company, New York. The council serves with Dr. Francis R. Dieuaide, scientific director of the fund, and with the medical directors' representatives as professional advisors to the fund's board. The new member of the Board of Directors is Claris Adams, president of the Ohio State Life Insurance Company, Columbus. Leroy A. Lincoln, president of the Metropolitan Life Insurance Company, New York, and Mr. M. Albert Linton, present chairman, were reelected to the board.

Committee on Problems of Alcohol.—This committee has been set up in the Division of Medical Sciences of the National Research Council on the request from the Research Council on Problems of Alcohol, which voted to disband in 1949 and asked the National Research Council to assume direction of its research program. The council is an operating agency of the National Academy of Sciences and is a private organization providing on request research correlation, advisory and administrative services. More than 4,000 academic and industrial scientists serve the council without pay. The Committee on Problems of Alcohol will initiate and support scientific research concerned with the action of alcohol in human beings and thus hopes to discover means of avoiding or correcting the pathologic effect of this chemical on persons who are vulnerable. There are many public and private agencies conducting research, treatment and educational programs on problems of alcohol. On the request of these agencies, the Committee on Alcohol is prepared to enter into contracts to: (1) review and advise on research projects in this field; (2) offer consultative services to those developing or revising statutes, promoting treatment or rehabilitation programs, or to those interested in establishing uniform recording procedures, and (3) organize and conduct interagency conferences.

The committee is not organized to provide public information or education in this field, but it is prepared to offer technical advice to responsible persons and agencies for the dissemination of information. Information on the work of this committee, including methods of submitting proposals for grants in support of research on problems of alcohol, may be obtained from the Secretary, Committee on Problems of Alcohol, Division of Medical Sciences, National Research Council, 2101 Constitution Avenue, N. W., Washington 25, D. C. Present members of the committee are Chauncey D. Leake, Ph.D., Galveston, Texas, chairman; Frank Brink Jr., Ph.D., Baltimore; Dr. Anton J. Carlson, Chicago; Dr. Oskar Diethelm, New York; Mr. Lawrence K. Frank, New York; Dr. Lawrence C. Kolb, Rochester, Minn.; Curt P. Richter, Ph.D., Baltimore; Mr. Ellis B. Slater, president, Frankfort Distillers Corporation; Dr. Isaac Starr, Philadelphia; Dr. George S. Stevenson, New York; Col. Frank B. Thompson, chairman of the board, Glenmore Distilleries Company; Wilfred W. Westerfield, Ph.D., Syracuse, N. Y.; Roger J. Williams, D.Sc., Galveston, Texas, and Joseph Hirsh, executive secretary, New York.

LATIN AMERICA

Study Spread of Cholera via Pilgrimages.—The Program Committee of the World Health Assembly May 15 appointed a working party at the request of Egypt to examine the danger of cholera spreading from endemic areas via Mecca pilgrimages into the East Mediterranean. Egypt, France, Pakistan, India, Italy, United Kingdom and Saudi Arabia comprise the working party to study the Egyptian document which points out that the pilgrimage season for the next 17 years coincides with the danger period in Egypt, from May to October. The document asserts that the present quarantine requirements are insufficient or neglected, especially by air travel.

New Periodical.—The first issue of the new periodical *Revista Colombiana de Obstetricia y Ginecologia*, organ of the Colombian Society of Obstetrics and Gynecology, under the chairmanship of R. Ramirez Merchan, appeared in January 1950. Headquarters are at Carrera 5 no. 14-46 Bogotá, Colombia. The 48 pages include an introductory editorial and the following original articles: "Some Aspects of Cardiopathies and Mechanism of Circulation During Pregnancy" by Dr. G. Lopez Escobar, "Ovulatory Pain" by Dr. H. Amaya-Leon, "Asphyxia Neonatorum" by Dr. H. Gomez Herrera, "Spontaneous Hysterectomy" by Dr. C. R. Silva Mojica, "Eclampsia and Retina" by Dr. A. Tribin Piedrahita and "Behavior in Premature Detachment of Normally Inserted Placenta" by Dr. J. Corral Maldonado.

Medical Week on Gastroenterology.—The Second Pan-American Medical Week on Gastroenterology will be held at Rio de Janeiro and São Paulo, Brazil, July 23-29 under the auspices of the Inter American Association of Gastroenterology. Drs. B. Montenegro and A. da Silva Mello are president and vice president, respectively, of the executive committee and members of the organizing committee. Official topics are: (1) Physiopathology of the Small Intestine, H. Bockus, U. S. A.; D. Gutiérrez Arrese, Spain; (2) Nonspecific Enteropathies, C. Jimenez Días, Spain; Silva Melo, G. Siffert, N. Marsiaj, F. J. Pontes, Brazil; Drs. Burrill B. Crohn, John H. Garlock, both of New York, U. S. A.; (3) Tuberculous Enteritis, C. Bonorino Udaondo, N. Stapler, C. Nuñez, D'Alotto, Argentina; J. Ramos and F. Cintra do Prado, Brazil; (4) Radiology of the Small Intestine, L. Zubiaurre, J. Carrere, C. A. Estapé, Uruguay; P. Maissa, Argentina; A. Ferreira, Brazil; (5) Functional Disturbances of the Small Intestine After Intestinal Resection, A. Ayala González, Mexico; E. Bastos, Brazil; (7) Occlusion of the Small Intestine, D. Prat, Uruguay, A. Paulino Jr., Brazil, and (8) Diverticula of the Small Intestine, A. Cegallos, A. Centeno, Argentina. Further information may be obtained from the general secretary: Dr. J. F. Pontes, Rua 7 de April, 176, 1° andar, São Paulo, Brazil.

Brazilian Society of Orthopedic Surgery.—The ninth annual convention of the Sociedade Brasileira de Ortopedia e Traumatologia will be held at the Hospital Santa Casa, São Paulo, Brazil, August 22-25. The following official reports will be made:

M. Lazareschi, São Paulo, and M. Weinberger, Rio, Treatment of the Fractures of the Shaft of the Femur.
Prof. D. Chaves, Rio, and E. Navajas, Santos, Osteotomies.

Several other papers will be presented. For the first time there will be scientific and technical exhibits. Guests of honor are: Drs. H. W. Meyerding, Mayo Clinic, Rochester, Minn.; J. Valls and C. Ottolenghi, Buenos Aires, and J. L. Bado from Montevideo. Besides the scientific sections there will be clinical demonstrations in the orthopedic clinic of the Hospital das Clinicas da Universidade de São Paulo, directed by Prof. Godoy Moreira, and in the orthopedic clinic of the Santa Casa, directed by Prof. D. Define. The president of the society and congress is Dr. Renato Bomfim.

FOREIGN

South Africa Clinical Journal.—The *South African Journal of Clinical Science* is the new quarterly publication of the Cape Town Post-Graduate Medical Association, the South African Institute for Medical Research and the Medical Association of South Africa. The new journal embodies the former *Clinical Proceedings*. The subscription price is £1 5s. It should be sent to Medical House, 35 Wale Street, P. O. Box 643, Cape Town, South Africa.

WHO Medical Training Centers in Europe.—Agreements have been signed by the World Health Organization with Czechoslovakia, Denmark and Poland establishing in those three countries medical training centers where courses will be given on an international basis. In Copenhagen a training center in anesthesiology will be set up for northern European physicians. Iceland and Sweden have indicated they will participate. A similar center in anesthesiology will be opened at Prague for WHO fellows from neighboring countries. Both centers were scheduled to open in May. Two agreements were signed by WHO and Poland for a training center in biochemistry at Wroclaw and a training center in venereal disease control at Warsaw. WHO aid to the centers will include cooperation with national health administrations and medical faculties in setting up the curriculum of the schools, subsidizing students, providing scientists and lectures and supplying essential equipment.

Marriages

Murray Alan Grossman, Syracuse, N. Y., to Miss Sally Yvonne Weisburgh in New Rochelle, May 14.

Louis Arthur Farchione, Waterloo, N. Y., to Miss Lucille F. Lauferswiler of Monticello, April 15.

Laurance Knight Groves, Cleveland, to Miss Mary Louise Carlisle of Garrettsville, April 1.

John J. Scott, Freeport, N. Y., to Miss Marie A. Dilliard of Allentown, Pa., April 15.

Harold M. Sesen to Miss Virtue Palmer Roberts, both of Lynn, Mass., March 31.

Robert L. Clark, Flint, Mich., to Miss Jane Snow Wallace of Saginaw, April 15.

DEATHS

Barrow, William Hulbert, Captain, U. S. Army, retired, San Diego, Calif.; born in Baltimore May 18, 1886; Harvard Medical School, Boston, 1916; member of the American Medical Association; entered the medical corps of the regular U. S. Army in February 1918; during World War I served with the American Expeditionary Forces; retired Jan. 7, 1921, for disability in line of duty; formerly lecturer in medicine at the University of Southern California School of Medicine and professor of clinical medicine at Stanford University School of Medicine, where for many years he was medical adviser; medical supervisor and athletic adviser, Middlesex School in Concord, Mass., 1921-1922; past president of the Southern California Medical Association; fellow of the American College of Physicians; member of the American Heart Association; specialist certified by the American Board of Internal Medicine; affiliated with the Scripps Memorial Hospital in La Jolla and the Mercy Hospital, where he died April 12, aged 63, of coronary heart disease.

Richards, George Gill ⊕ Salt Lake City; born in Mendon, Utah, Sept. 5, 1883; University and Bellevue Hospital Medical College, New York, 1906; specialist certified by the American Board of Internal Medicine and a member of the board from 1936 to 1946; associate clinical professor of medicine at the University of Utah School of Medicine; fellow of the American College of Physicians, of which he had been second vice president, regent and member of the board of governors; served as captain in the medical corps of the U. S. Army Reserve from 1918 to 1934; during World War II medical adviser for the Utah Selective Service; chairman of the Section on Practice of Medicine, American Medical Association, 1931-1932; for many years affiliated with Dr. W. H. Groves Latter Day Saints Hospital; one of the founders of the Salt Lake Clinic; died in Massachusetts General Hospital in Boston April 19, aged 66, of coronary thrombosis.

Andries, Joseph H., Detroit; born in Milwaukee, April 7, 1874; Friedrich-Wilhelms-Universität Medizinische Fakultät, Berlin, Prussia, 1897; emeritus professor of surgery at the Wayne University College of Medicine, where for many years he was associate professor of clinical surgery; member and past president of the Tri-State Medical Association and the Academy of Surgery of Detroit; for many years a member of the board of trustees of the Wayne County Medical Society; served on the staffs of St. Joseph's Mercy, St. Mary's and Providence hospitals; at one time nominated for the Detroit Medical Hall of Fame; died April 15, aged 76, of cirrhosis of the liver.

Buchanan, James Arthur ⊕ Brooklyn, born in Oxford, Pa., Sept. 7, 1887; University of Pennsylvania School of Medicine, Philadelphia, 1915; fellow of the American College of Physicians; served with the American Expeditionary Forces during World War I; in April 1919 entered the Mayo Foundation at Rochester, Minn., as a fellow in medicine and left April 30, 1922; became an internist at the Pueblo Clinic in Pueblo, Colo.; served on the faculty of Long Island College Hospital and as attending physician at Wyckoff Heights and Coney Island hospitals; died April 17, aged 62.

Beam, Watson W., Rolfe, Iowa; State University of Iowa College of Medicine, Iowa City, 1886; member of the American Medical Association and the American Association of Railway Surgeons; past president of the Pocahontas County Medical Society; formerly councilor for the eleventh district of the state medical society; for many years a member and at one time president of the school board; formerly director of the First National Bank; died in the Lutheran Hospital, Fort Dodge, April 11, aged 91, of pneumonia and chronic myocarditis.

Adams, Ralph Crawe, Bird Island, Minn.; Jefferson Medical College of Philadelphia, 1906; member of the American Medical Association; died April 25, aged 71, of arteriosclerotic heart disease.

Ahlborn, Maurice Bertram ⊕ Wilkes-Barre, Pa.; University of Pennsylvania Department of Medicine, Philadelphia, 1898; fellow of the American College of Surgeons; for many years affiliated with the Wilkes-Barre General Hospital; died April 9, aged 73.

Beaton, Lindsay Alexander, Kenilworth, Ill.; Rush Medical College, Chicago, 1905; died in Janesville, Wis., May 13, aged 70.

⊕ Indicates Fellow of the American Medical Association.

Board, Milton, Louisville, Ky.; University of Louisville Medical Department, 1893; member of the American Medical Association and its House of Delegates in 1914, 1915 and 1916; served during World War I; from 1900 to 1904 member of the state board of charities and correction; died in Good Samaritan Hospital March 29, aged 79, of acute myocarditis.

Boehringer, Herman Winfield, Havertown, Pa.; Temple University School of Medicine, Philadelphia, 1910; formerly on the faculty of his alma mater; died April 17, aged 72, of cerebral hemorrhage.

Bogard, R. C., Hensley, Ark. (licensed in Arkansas in 1903); died April 16, aged 80, of pneumonia.

Bond, John Harvey ⊕ Fargo, N. D.; University of Pennsylvania School of Medicine, Philadelphia, 1936; died in April, aged 39.

Bossard, Harry Bardwell ⊕ Phillipsburg, N. J.; Jefferson Medical College of Philadelphia, 1901; past president and treasurer of the Warren County Medical Society; a medical examiner for schools in Hopatcong and Harmony townships; affiliated with Warren Hospital; died in April, aged 72, of cardiac infarction.

Boyer, Robert ⊕ Philadelphia; Medico-Chirurgical College of Philadelphia, 1898; fellow of the American College of Surgeons; member of the American Urological Association; affiliated with Nazareth Hospital; died in Abington (Pa.) Memorial Hospital April 15, aged 73, of heart disease.

Boyle, Hugh Cotter, Philadelphia; Temple University School of Medicine, Philadelphia, 1914; served overseas with the British Army during World War I; member of the surgical staff of Sacred Heart Hospital and was attached to the auxiliary staff of Allentown Hospital; club physician for the Philadelphia "Phillies" baseball team of the National League from 1936 to 1942; died in Misericordia Hospital, Philadelphia, March 20, aged 62.

Brinson, William David, Baldwin, Fla.; Vanderbilt University College of Medicine, Nashville, Tenn., 1913; member of the American Medical Association; died April 15, aged 69, of heart disease.

Brown, Edwin, Philadelphia; Jefferson Medical College of Philadelphia, 1886; died in the Abington (Pa.) Memorial Hospital April 10, aged 87.

Brubaker, Elber Robert ⊕ Mesa, Ariz.; Medical College of Ohio, Cincinnati, 1908; member of the Ohio State Medical Association and the Radiological Society of North America; at one time practiced in Springfield, Ohio, where he was affiliated with City Hospital; served during World War I; medical recruiting officer for the Navy in the Cincinnati district with the rank of lieutenant commander during World War II; died in the Southside District Hospital April 4, aged 65.

Bruorton, Oscar Lucas, Georgetown, S. C.; Medical College of the State of South Carolina, Charleston, 1912; past president of the Georgetown County Medical Society; served during World War I; died in Cairo, Ill., March 26, aged 64, of coronary occlusion.

Burgher, Arthur Ernest, St. Joseph, Mo.; Keokuk (Iowa) Medical College, College of Physicians and Surgeons, 1902; member of the American Medical Association; past president of the Buchanan County Medical Society; affiliated with Missouri Methodist and St. Joseph's hospitals; died April 2, aged 73, of carcinoma.

Cade, Charles Craig ⊕ San Antonio, Texas; University of Texas School of Medicine, Galveston, 1909; fellow of the American College of Surgeons; served during World War I; member of the staffs of the Robert B. Green Memorial, Santa Rosa and Nix Memorial hospitals; died April 11, aged 63.

Caldwell, Joseph Davis, North Adams, Mass.; College of Physicians and Surgeons, Boston, 1906; affiliated with North Adams Hospital; died May 2, aged 67, of coronary thrombosis.

Carter, Paul Conway, Madison, N. C.; University of Maryland School of Medicine and College of Physicians and Surgeons, Baltimore, 1916; past president of the Rockingham County Medical Society; member of the American Medical Association; served during World War II and in France during World War I; member of the school board; died in the Veterans Administration Hospital, Richmond, March 27, aged 60, of hepatitis.

Casteel, Lewis Ryley, Metasville, Ga.; Vanderbilt University School of Medicine, Nashville, Tenn., 1893; member of the American Medical Association; died March 26, aged 81.

Cleveland, Joseph Dewey, Memphis, Tenn.; Northwestern University Medical School, Chicago, 1926; member of the American Medical Association and the Southeastern Surgical Congress; affiliated with the Baptist Memorial Hospital, where he died April 12, aged 51, of heart disease.

Cole, Charles F., Prattsville, Ark. (licensed in Arkansas in 1903); member of the American Medical Association; at one time justice of the peace; died in Malvern April 21, aged 81, of myocarditis.

Crouch, J. Frank, Baltimore; University of Maryland School of Medicine, Baltimore, 1890; member of the American Medical Association; professor emeritus of clinical ophthalmology and otology at his alma mater; formerly on the staffs of the Presbyterian Eye, Ear and Throat Charity Hospital and the Baltimore Eye, Ear and Throat Charity Hospital; died April 20, aged 84.

Cummings, Robert Newton, Emmett, Idaho; Denver and Gross College of Medicine, 1903; died April 12, aged 75, of coronary thrombosis.

Da Costa, A. Antonio ✠ San Diego, Calif.; Howard University College of Medicine, Washington, D. C., 1931; was found murdered in his home April 16, aged 47.

Dobyns, Gypsie Junius ✠ San Francisco; Northwestern University Medical School, Chicago, 1934; served during World War II; affiliated with the Veterans Administration; died April 7, aged 47.

Edwards, Edward Emlin ✠ Taylor, Pa.; University of the South Medical Department, Sewanee, Tenn., 1908; University of Louisville (Ky.) School of Medicine, 1909; school physician; served on the staff of Moses Taylor Hospital, Scranton; died April 15, aged 66, of carcinoma of the stomach.

Emmerson, William Stanford, Waconia, Minn.; University of Minnesota College of Medicine and Surgery, Minneapolis, 1904; died April 19, aged 72, of cerebral hemorrhage.

Enzor, Roscoe Hinson, Smithville, Ga.; Atlanta School of Medicine, 1911; member of the American Medical Association; served as mayor, county health officer and a director of the Farmers and Merchants Bank; died April 12, aged 61.

Epperson, Egbert Ernest, Meadowview, Va.; University College of Medicine, Richmond, 1905; member of the American Medical Association; died in the George Ben Johnston Memorial Hospital, Abingdon, April 1, aged 71.

Fenske, Hugo Oscar ✠ Chicago; Loyola University School of Medicine, Chicago, 1942; affiliated with Grant Hospital, where he died March 26, aged 39.

Fitzgerald, Guy Harland ✠ Tucson, Ariz.; University of Wooster Medical Department, Cleveland, 1898; fellow of the American College of Surgeons; died April 24, aged 76, of cerebral embolism.

Foulon, Irenaeus Lister ✠ East St. Louis, Ill.; Washington University School of Medicine, St. Louis, 1915; served during World War I; member of the board of directors and executive committee of St. Clair County Tuberculosis Association, of which he had been president for many years; member of the board of directors of East St. Louis First National Bank; died in St. Mary's Hospital April 15, aged 61, of heart disease.

Franck, William L., Pottstown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1897; on the staff of the Pottstown Memorial Hospital, where he died March 28, aged 74.

Garner, Albert Rowland ✠ Norristown, Pa.; Hahnemann Medical College and Hospital of Philadelphia, 1902; past president of the Montgomery County Medical Society; affiliated with Montgomery Hospital; chairman of the Public Assistance Committee; died May 7, aged 73.

Givens, Emory Marion, McComb, Miss.; College of Physicians and Surgeons, Memphis, Tenn., 1908; member of the American Medical Association; died April 2, aged 70.

Gosian, Moses, Brockton, Mass.; Tufts College Medical School, Boston, 1919; member of the American Medical Association; died March 10, aged 63, of coronary occlusion.

Green, Frank Bernard, Chicago; University of Illinois College of Medicine, Chicago, 1935; died April 30, aged 40, of coronary occlusion.

Griffin, Robert Bailey, Ripley, Tenn.; Vanderbilt University School of Medicine, Nashville, 1898; member of the American Medical Association; health officer of Lauderdale County; died April 12, aged 73, of coronary occlusion.

Guess, James Edward, Okmulgee, Okla.; Meharry Medical College, Nashville, Tenn., 1902; formerly postmaster of Clarksville; affiliated with City Hospital; died March 5, aged 77, of carcinoma of the liver.

Hagyard, Charlton Edward ✠ Seattle; College of Physicians and Surgeons of Chicago, School of Medicine of the University of Illinois, 1903; an Associate Fellow of the American Medical Association; died April 8, aged 72.

Hall, Neal, Amarillo, Texas; University of Texas School of Medicine, Galveston, 1923; member of the American Medical Association; died in St. Anthony's Hospital February 19, aged 56, of ventricular fibrillation.

Harned, Henry S. ✠ Boston, Ky.; Hospital College of Medicine, Louisville, 1901; died March 11, aged 71, of coronary thrombosis.

Hastings, Kent Kane, Rocky River, Ohio; University of Wooster Medical Department, Cleveland, 1896; died March 31, aged 79.

Havely, John Minor, Torrington, Wyo.; American Medical College, St. Louis, 1896; died April 26, aged 81, of heart disease

Heinze, Charles Frederick, St. Paul; University of Minnesota College of Medicine and Surgery, Minneapolis, 1896; died in St. Peter (Minn.) State Hospital April 23, aged 78, of arteriosclerosis and diabetes mellitus.

Heitman, Jefferson Henry, Tioga, Ill.; Barnes Medical College, St. Louis, 1899; died March 28, aged 76, of coronary thrombosis.

Hines, Frank Brown, Chestertown, Md.; College of Physicians and Surgeons, Baltimore, 1904; member and past president of the Medical and Chirurgical Faculty of Maryland; deputy medical examiner for Kent County; served during World War I and for many years in the National Guard; chairman of the county draft board; surgeon for the local branch of the Pennsylvania Railroad; chief of staff of the Kent and Upper Queen Anne's General Hospital, where he died March 28, aged 68, of carcinoma of the right lung.

Holcombe, Luman Clayton ✠ Milton, Vt.; University of Vermont College of Medicine, Burlington, 1894; an Associate Fellow of the American Medical Association; for many years health officer of the town of Milton; died March 27, aged 84, of intestinal obstruction.

Hutchins, Wiley Paremore, Hot Springs National Park, Ark.; University of Arkansas School of Medicine, Little Rock, 1912; died March 30, aged 73, of carcinoma of the prostate.

Kelleam, Edwin Ayres, Wright City, Okla.; University of Louisville (Ky.) Medical Department, 1907; member of the American Medical Association; for many years associated with the Indian Service; died in Edmond March 28, aged 68, of heart disease.

Kilpatrick, Lewis Alexander ✠ Gadsden, Ala.; Birmingham Medical College, 1909; died March 24, aged 64, of carcinoma.

Lamb, Harvey Densmore ✠ St. Louis; Washington University School of Medicine, St. Louis, 1910; assistant professor of ophthalmology at St. Louis University School of Medicine; at one time on the faculty of his alma mater; specialist certified by the American Board of Ophthalmology; served on the staffs of St. Mary's Group of Hospitals, Missouri Pacific Hospital and Barnes Hospital; died in Jewish Hospital April 6, aged 66, of edema of the lung.

Larsson, Johan Gustave, Boston; Long Island College Hospital, Brooklyn, 1907; died March 12, aged 72, of arteriosclerotic heart disease.

Linn, Harry Preston ✠ Paducah, Ky.; University of Nashville (Tenn.) Medical Department, 1909; medical officer in charge of the U. S. Public Health Service in Paducah; affiliated with Riverside and Illinois Central hospitals; died April 9, aged 64, of myocardial infarct.

Lucas, George Maurice, Jacksonville, Ill.; Northwestern University Medical School, Chicago, 1920; fellow of the American College of Surgeons; on the staff of the Jacksonville State Hospital; died April 1, aged 55, of acute cardiac dilatation.

Ludeau, Jules Ernest, Houston, Texas; Kentucky School of Medicine, Louisville, 1892; died in Heights Hospital March 30, aged 79.

McCarty, Elba Denton ✠ Tacoma, Wash.; University of Michigan Department of Medicine and Surgery, Ann Arbor, 1903; specialist certified by the American Board of Radiology; member of the American Roentgen Ray Society; affiliated with Pierce County Hospital and Tacoma General Hospital, where he died February 27, aged 72, of hemorrhagic pancreatitis.

McCord, Frank Everett, Jacksonville, Ill.; Gross Medical College, Denver, 1898; member of the American Medical Association; county health officer; died in the Passavant Memorial Hospital April 11, aged 72, of duodenal ulcer.

McGuire, James Anthony, Denver; Creighton University School of Medicine, Omaha, 1940; member of the American Medical Association; certified by the National Board of Medical Examiners; specialist certified by the American Board of Dermatology and Syphilology; served during World War II; assistant in dermatology and syphilology at the University of Colorado School of Medicine; affiliated with Mercy, St. Anthony's, St. Joseph's and Denver General hospitals; died April 22, aged 34.

McIntosh, William Page, Buffalo, W. Va.; University of Pennsylvania School of Medicine, Philadelphia, 1910; died in the Soldiers' Home Hospital, Chelsea, Mass., recently, aged 62, of cerebral hemorrhage and hypertensive arteriosclerotic heart disease.

McKee, John Sasser, Raleigh, N. C.; University of Maryland School of Medicine, Baltimore, 1907; served during World War I; for many years city physician; affiliated with Rex and St. Agnes hospitals; died in Morgantown April 22, aged 72, of coronary occlusion.

McManus, Matthew Patrick, Bayside, N. Y.; Long Island College of Medicine, Brooklyn, 1934; member of the American Medical Association; served during World War II; affiliated with Flushing (N. Y.) Hospital and Dispensary; died in México D. F., April 18, aged 43, of coronary occlusion.

McVay, Frederick Roy ✠ Botkins, Ohio; Medical College of Ohio, Cincinnati, 1909; died sudenly in Clearwater, Fla., March 25, aged 67.

Marlette, George Clark ✠ New Orleans; University of Alabama School of Medicine, 1916; member of the Medical Association of the State of Alabama; served during World War I; associated with the Veterans Administration; died in the U. S. Marine Hospital in Mobile, Ala., April 14, aged 62, of congestive heart failure.

Martin, John Russell ✠ Chattanooga, Tenn.; University of Tennessee College of Medicine, Memphis, 1931; medical director and owner of the Woman's Clinic Hospital, where he died April 13, aged 43, of cardiorenal failure.

Mattison, Edward Rochelle, Atlanta, Ga.; Meharry Medical College, Nashville, Tenn., 1913; died recently, aged 61, of myocarditis, chronic nephritis and hypertension.

Mayberry, Irwin William, Scottown, Ohio; Ohio-Miami Medical College of the University of Cincinati, 1911; served during World War I; died April 21, aged 63.

Meacham, Cowan Cameron, Los Vegas, Nev.; Vanderbilt University School of Medicine, Nashville, Tenn., 1892; affiliated with the Las Vegas State Hospital, where he died April 3, aged 82.

Meier, Duane Alva, Houston, Texas; University of Nebraska College of Medicine, Omaha, 1942; served during World War II; through anonymous donations, the Duane A. Meier Bone Bank was made possible in his memory and established in the Hermann Hospital of the Texas Medical Center; died April 10, aged 32, of cerebral hemorrhage.

Meyer, Albert Joseph ✠ Thibodaux, La.; Medical Department of Tulane University of Louisiana, New Orleans, 1886; past president of Lafourche Parish Medical Society; for many years coroner for Lafourche Parish; died April 5, aged 89.

Nielson, Moses Marion, Los Angeles; Northwestern University Medical School, Chicago, 1911; for many years practiced in Salt Lake City, serving as president of the Salt Lake County Medical Society and on the staff of Holy Cross Hospital; died April 8, aged 65, of coronary occlusion.

Noble, Thomas Benjamin Sr., ✠ Indianapolis; Miami Medical College, Cincinnati, 1893; Medical College of Indiana, Indianapolis, 1894; an Associate Fellow of the American Medical Association; fellow of the International College of Surgeons; served on the staff of Indianapolis City Hospital; died in St. Vincent's Hospital April 12, aged 82, of cerebral hemorrhage and arteriosclerosis.

Older, Benjamin, Union City, N. J.; College of Physicians and Surgeons, Boston, 1906; member of the American Medical Association; died in St. Anthony's Hospital, St. Petersburg, Fla., April 19, aged 66, of myocardial infarction.

Prather, Roy William, Excelsior Springs, Mo.; University Medical College of Kansas City, 1909; member of the American Medical Association; served during World War I; for many years county coroner; affiliated with the Excelsior Springs Sanitarium and Hospital; died April 12, aged 68, of diabetes mellitus.

Reed, Jared A., Newark, N. Y.; New York Homeopathic Medical College, New York, 1884; member of the American Medical Association; served as a member, president and secretary of the board of education; died March 27, aged 91.

Reid, Peter ✠ Spokane, Wash.; University of Toronto Faculty of Medicine, Toronto, Canada, 1907; served overseas in the medical corps of the Royal Canadian Army during World War I; affiliated with the Deaconess, St. Luke's and Sacred Heart hospitals; died April 15, aged 69, of cerebral hemorrhage.

Rose, Julius Townsend ✠ Healdsburg, Calif.; Columbia University College of Physicians and Surgeons, New York, 1904; died in Santa Rosa recently, aged 80, of cardiorenal vascular disease.

Schmid, Cornelius Adrian, Brooklyn; Long Island College Hospital, Brooklyn, 1912; member of the American Medical Association; affiliated with St. Peter's Hospital, where he died April 17, aged 61.

Schnauffer, William Jr., ✠ Frederick, Md.; Medical College of Virginia, Richmond, 1933; affiliated with the Frederick Memorial Hospital; died in the Johns Hopkins Hospital, Baltimore, April 8, aged 46, of thrombosis of a spinal artery.

Sether, Alvin Fernando ✠ Eugene, Ore.; Rush Medical College, Chicago, 1904; fellow of the International College of Surgeons and the American College of Surgeons; on the staff of the Sacred Heart Hospital; died March 3, aged 68, of angina pectoris and arteriosclerosis.

Smith, Lindsey Gillespie, Mesquite, Texas; University of Louisville (Ky.) Medical Department, 1899; died April 11, aged 78.

Steinhart, Lewis Phillip, Atlantic City, N. J.; University of Pennsylvania Department of Medicine, Philadelphia, 1900; served during World War I; died in Elkins Park, Pa., March 30, aged 72, of carcinoma of the lung.

Stofer, Michael Webster, Norwich, N. Y.; Medico-Chirurgical College of Philadelphia, 1910; member of the American Medical Association; served during World War I; died in Phoenix, Ariz., April 17, aged 62, of carcinoma.

Struthers, Clayton Pryor, Riegelsville, Pa.; Medico-Chirurgical College of Philadelphia, 1916; for many years on the board of health of Wilson borough and affiliated with the Easton (Pa.) Hospital; died April 17, aged 58, of carcinoma of the rectum.

Tatum, P. A., Columbus, Ga.; Atlanta College of Physicians and Surgeons, 1905; member of the American Medical Association; affiliated with City Hospital, where he died April 2, aged 67.

Troy, Anderson L., West Milton, Ohio; Miami Medical College, Cincinnati, 1904; died March 20, aged 77.

Turner, Charles Alexander, Dyersburg, Tenn.; University of Louisville (Ky.) Medical Department, 1894; member of the American Medical Association; affiliated with Baird-Brewer General Hospital, where he died April 22, aged 81, of bronchopneumonia and aortic regurgitation.

Washburn, Harry Augustus, Waldron, Ind.; Medical College of Indiana, Indianapolis, 1897; at one time county coroner; died April 24, aged 76, of chronic valvular heart disease and chronic bronchitis.

Weintraub, Harry, Hopewell Junction, N. Y.; University and Bellevue Hospital Medical College, New York, 1923; specialist certified by the American Board of Otolaryngology; member of the American Medical Association; past president of the Clinical Society and Alumni Society and on the staff of the Bronx Hospital, where he died April 17, aged 51, of uremia.

Weitzen, Max, New York; Long Island College Hospital, Brooklyn, 1910; member of the American Medical Association; affiliated with the Beth Israel Hospital, where he died February 26, aged 70, of heart disease.

Wilkinson, George Henry, Moorestown, N. J.; Medico-Chirurgical College of Philadelphia, 1896; also a graduate in pharmacy; formerly township physician and health officer; died April 23, aged 92, of arteriosclerotic heart disease.

Windholz, Frank S., ✠ San Francisco; Karl-Franzens-Universität Medizinische Fakultät, Graz, Austria, 1922; assistant clinical professor of radiology at the Stanford University School of Medicine; specialist certified by the American Board of Radiology; affiliated with Stanford University hospitals; died April 29, aged 53.

Wrinkle, George Scott, Santa Cruz, Calif.; Cooper Medical College, San Francisco, 1909; for many years affiliated with Mendocino State Hospital in Talmage; died April 19, aged 67, of carcinoma of the tongue and throat.

FOREIGN LETTERS

TURKEY

(From a Regular Correspondent)

ANKARA, May 4, 1950.

Streptomycin Therapy in Tuberculous Meningitis

Ord. Prof. Ihsan Hilmi Alantar and Dr. Sezai Bedreddin Tumay of the Istanbul University Children's Hospital have published the results of three years of streptomycin therapy in tuberculous meningitis. During the last two years the supply of streptomycin has become more plentiful. Since a license for its importation is no longer required and since it is now duty and tax exempt and less expensive, 1 Gm. selling for 180 to 200 kurus (e.g., 60 cents), more patients can afford it. Unlike all other medicaments, streptomycin is not provided by the hospitals.

Of the 84 patients, 44 were boys and 40 were girls; 3 patients were under 1 year of age, 20 were 2, 11 were 3, 6 were 4, 2 were 5, 9 were 6, 7 were 7, 6 were 8, 6 were 9, 5 were 10, 3 were 11, and 6 were 12 years of age. Eleven patients, 13 per cent, were in the advanced stage of the disease with advanced granulation; in 3 patients the disease was accompanied with tuberculosis of the vertebra (Pott's disease) and in 1 patient with spinal ventosa. Sixty patients, 71.4 per cent, were in coma and 11, 15.3 per cent, were in the precoma stage on admission. Sixteen patients were unable to obtain streptomycin; 50 patients received the drug for a short course of treatments; 15 patients received 1 Gm. daily for a course of treatment, and 3 patients were treated a long time with small doses. The 16 patients admitted in coma and unable to obtain streptomycin died within a week without regaining consciousness. Most of the 50 patients receiving the short treatment, with 15 to 20 Gm., were given a daily dose of 1 Gm. of streptomycin. Intramuscular and intraspinal routes were used; the daily dose given intraspinally was 0.15 Gm., and after 10 to 15 days improvement was visible. If after an interval of 10 to 15 days treatment was not resumed, the patient's condition deteriorated, the patient becoming deeply comatose. In patients admitted in the late stage of the disease the lesions in the meninges and the brain caused spastic paralysis, with a resultant unfavorable prognosis. Though several patients received 120,000 to 150,000 units of streptomycin per kilogram of body weight, it had no effect and the outcome was fatal. Patients receiving the short treatment improved in the beginning, but the results were unsatisfactory, the organisms' acquiring resistance during the interval with resultant relapses and complications. The first course of short treatment was therefore prolonged from 20 to 30 days and then gradually to 50 and 60 days. The result was checked during a 15 to 30 day interval after the two month treatment. To prevent the organisms acquiring resistance, the interval was not prolonged. There were no untoward results in several patients with streptomycin sensitivity whose second course of treatment was as long as the first. In these cases the daily dose was less, the interval between the intraspinal injections was prolonged and after the second course there was another interval of 15 to 30 days. The authors' experience has shown that the length of time required for the treatment of tuberculous meningitis is individually determined. Though patients have been given more than the 150 Gm. of streptomycin considered sufficient for the treatment of children, it did not always have the desired effect and relapses occurred, while in children who were given less than 100 Gm. the results were satisfactory. The treatment was therefore based on the condition of the patient, the extent of the lesions and the degree of tolerance. During the intervals the patient's condition was checked by means of a lumbar puncture; when the cell count was unsatisfactory the patient was given another course of one to two months' treatment.

Complications were as follows: 12 patients had nystagmus, 6 convulsions, 8 severe insomnia, 10 severe headache, 11 great excitation and 39 patients vomited. These conditions occurred mostly after a lumbar puncture or intraspinal injection. Of the 35 complications 3 (8.5 per cent) occurred in patients up to the age of 1 year, 14 (40 per cent) in 1 to 5 year old patients, 12 (34.3 per cent) in 6 to 10 year old patients and 6 (17.2 per cent) in 12 year old patients. Major complications were hydrocephalus in 3 patients under 1 year of age; 1 died on the fifty-fourth day, after the administration of 42 Gm. of streptomycin; another died on the forty-fifth day, after the use of 39 Gm. of streptomycin, and the third died on the twelfth day, after administration of 15 Gm. On admission disturbance of vision was present in 34 (40.4 per cent); of these, 10 patients were in coma, 12 were in the precoma stage and 10 were semiconscious. Ten patients had papillary stasis; 10 had papillitis; 4 had atrophy of the optic nerve; 1 had central blindness; 3 had choroiditis; 1 had otitis media purulenta, and 3 had otitis interna and vertigo. All the complications except one cleared up; a 2½ year old child suddenly became deaf and remained so. On admission 16 patients had spastic paralysis; this developed in 7 patients during treatment. Of these 23 patients, 18 (78 per cent) had general spastic paralysis and 5 (22 per cent) had partial spastic paralysis. Two patients had hemiplegia.

Death of Prof. Kadri Rashid Anday

Turkey's first pediatrician, Prof. Kadri Rashid Anday, formerly of the Imperial Ottoman Medical School, Istanbul, died at his home in Istanbul at the age of 74. When he was in his third year at the medical school, because of his political inclinations, he went to Paris. He graduated from the medical school there with high honor and remained in Paris for seven years. On his return to Turkey, in 1901, he taught physiology at the Civil Imperial Medical School and opened the first children's policlinic in Turkey. Previously infants had been treated by obstetricians and older children by internists. The policlinic was the start of special training for Turkey's pediatricians; sick children were brought to it from remote parts of the country. In 1907 Dr. Anday became chief physician to the Istanbul-Shishli Children's Hospital and in 1907 was offered the first chair of pediatrics at the University of Istanbul. When the university was reorganized, in 1933, Prof. Anday was retired, after 32 years as a faculty member. As pediatrician to the Istanbul, Pera Municipal Hospital he continued his work for 12 more years. He was president of the Society of Turkish Pediatricians and had publications in the Turkish and the French languages to his credit. He published numerous articles on tuberculosis and rheumatism in French medical periodicals. He was also a noted physiologist.

SPAIN

(From a Regular Correspondent)

MADRID, March 15, 1950.

History of Spanish-American Medicine

The first issue of the *Archivos Ibero-Americanos de Historia de la Medicina* was published recently in Spain by the Superior Council on Scientific Investigations, under the combined editorship of Drs. A. Ruiz Moreno of Buenos Aires and P. Lain Entralgo of Madrid with the collaboration of Dr. J. B. Lastres of Lima, Drs. Alberti, Paniagua, Valle-Inclan and Palafox, all of Madrid, Granjel of Salamanca and Janini of Valencia. The following original articles are published in this issue: "History of Hippocratic Clinic," by Dr. P. Lain Entralgo; "General Pathology of Arnaldo de Vilanova," by J. A. Paniagua;

"Anatomic Lexicon of Bernardino Montaña de Monserrate and Juan de Valverde," by C. Valle-Inclan; "Jung's Psychology in the History of Relationship Between Medicine and Religion," by L. S. Granjel, and "Pathos and Saint Jeronimus' Diet," by J. Janini Cuesta. These articles reflect a trend toward the Spanish history of medicine. A classical text, "Physicians' Caution," by Arnaldo de Vilanova, a great representative of Spanish medicine of the thirteenth century, appeared also in the first issue. All future issues of the periodical will contain a reprint of a classical text.

Coming issues will contain interesting articles on galenic scripts over the pulse by Dr. A. Ruiz Moreno; on Incan medicine by Dr. J. B. Lastres; on P. Gilabert Jofré, founder of the first asylum for the insane in the world, by Dr. Marco Merenciano; on human anatomy and physiology in Averroes' work by Dr. Molero of Granada; on hospitals during the Spanish colonization in America by Dr. Guijarro, and on anatomic illustrations not described to date (rare variants of the "Fliegende Blätter) by Prof. Altumada of Buenos Aires.

ISRAEL

(From a Regular Correspondent)

JERUSALEM, May 10, 1950.

Tuberculosis Among New Immigrants

The medical aspect of the immigration problem is characterized by the fact the immigrants have been affected by the most difficult hygienic and social conditions through their stay in various camps of the world.

In his report on immigration and the tuberculosis problem in *Harefu'ah* of June 15, 1949, J. Khasis pointed out that among the immigrants of 1946-1947 there were 3.15 per cent clinical pulmonary tuberculosis cases. Of these 1 to 1.5 per cent required hospitalization, i. e., 206 patients out of 20,000 immigrants.

Tuberculosis is prevalent among the Yemenite Jews in Israel. While many specialists are impressed with the considerable immunity to tuberculosis of Sephardi and Ashkenazi Jews, phthisiologists in Israel are concerned about the limited resistance of Yemenite Jews. Twenty-five statistical investigations of populations all over the world have shown that the tuberculosis mortality of Ashkenazi and Sephardi Jews is two to three times smaller than that of Christians and five to seven times smaller than that of Moslems living in the same country.

In the Safad Hospital there were among 1,204 Jewish patients during the last 10 years, 75 per cent Ashkenazi Jews, 12.8 per cent Sephardi Jews and 12.2 Yemenite Jews. After the hospital in Safad was turned into a military tuberculosis hospital, the new ward had 25 per cent Yemenites among the soldiers.

In the absence of official statistics some calculations have been made according to which the morbidity of Yemenite Jews was found to be 2.5 times higher than that of the other Jews in Israel. The morbidity of Sephardi and Ashkenazi Jews is 526 out of 100,000, compared with 1,525 Yemenites.

Tuberculosis mortality per 100,000 is 56.4 among Sephardi and Ashkenazi Jews and 305 among Yemenites.

In the course of an address to the Association for the Study of Immigrants' Problems, Dr. Lee Gennis, medical director of "Malben," the new rehabilitation service for sick immigrants, mentioned that even greater than the need for general hospital accommodation in Israel was the grave need of beds for patients with tuberculosis and mental disease. About 60,000 immigrants had been examined and roentgenograms made since March 1949. Out of every 1,000 persons, 6 had active tuberculosis—double the world average. This average was expected to rise to 8. A total of 3,600 hospital beds were needed for those who had already arrived; only 650 were available.

Tuberculosis was the most widespread disease among the immigrants and represented one third of all the illnesses.

Infant Growth Under Abnormal Conditions

During the siege of Jerusalem, in the summer of 1948, the caloric value of daily distributed food decreased from the usual 2,500 calories per day to 1,360 in April, 940 in May and 670 in June. In addition, children and infants suffered from lack of fresh air and sun, as the constant shelling of the town made it dangerous or impossible for mothers to go for a walk with their children.

In comparison with war conditions in other countries, according to a report by Dr. Walter Hirsch, two characteristic features of the siege may be pointed out: (1) the short duration and (2) the severe restrictions concerning food, sun and fresh air. It could be supposed that the time of the Jerusalem siege was too short for demonstration of a growth deficit in children. This assumption could be confirmed in 84 children between 2 and 12 years of age, whose growth continued normally during the siege. Also, 50 infants up to 2 years of age had increased in height; 33 of them had grown normally in accordance with their age, but in 18 infants the increase in length had been more—double or even triple—than what had to be expected according to age and time. Such an increased growth in infants under abnormal conditions is a strange phenomenon, which has not been mentioned before in scientific papers. The increased growth has resulted in temporary damage only. All the infants with increased growth had lived during the siege under conditions of lack of sun and fresh air in addition to malnutrition. One is tempted to cite analogies in the life of animals and plants, such as the enormous growth of cave animals in former times and the increased growing impulse of certain plants (potatoes and onions) if kept without light. With all due precaution a certain parallelism may be mentioned between the heliotropism of plants and the increased growth impulse of these "babies in the dark."

Eosinophilic Erythredema

In 1944 and 1949-1950 an increased incidence of eosinophilic erythredema was reported. The cause of the syndrome, which combines transitory, migrating swellings of various parts of the skin and mucous membranes with eosinophilia of the blood, has not been discovered as yet. Lyon recently reported his observation (*Acta med. orient.* **9**: 17, 1950).

The swellings of the skin and mucous membranes, combined with warmth, occasionally with a reddish tinge, of the affected areas, are also observed in the lymph nodes and in the lungs, as transitory pulmonary infiltrations, periphlebitis and peripheral endarteritis. Swelling of the liver, hydropsy of the knee and pleural effusions were observed. The blood cell count showed alternating amounts of leukocytes and increased eosinophils. A biopsy could be made in the case of one patient with characteristic, relapsing swellings of the skin (forearm). It was found that the capillaries and small arteries of the papillary zones and of the upper portions of the cutis showed considerable engorgement. There was hyaline thickening of the walls of small blood vessels. Some blood vessels were surrounded by sparse accumulations composed mainly of small and large round cells. Some of the cells resembled lymphocytes, many others were larger and showed basophilic granulation of the cytoplasm.

Lyon is of the opinion that eosinophilic erythredema is an allergic disease, affecting mainly the capillaries. There is no single cause of this illness (such as filaria), but various allergens are acting together (intestinal parasites, including Escherichia histolytica). Antihistamines are successful for a short time as a symptomatic treatment. The prognosis is favorable, but where it persists or recurs frequently for years the question of the degree of permanent vascular damage remains to be answered.

COLOMBIA

(From a Regular Correspondent)

BOGOTÁ, May 4, 1950.

New Technic of Plastic Reconstruction of the Biliary Tract

Dr. J. T. Henao of Bogotá is the originator of a new surgical technic for the plastic reconstruction of the biliary tract in cases of obstruction. The new operation, called by the originator cholecystojejunoplastogastrostomy, consists of the operator's isolating a segment of the first jejunal loop, leaving it on its pedicle and reestablishing the continuity through end to end enteroanastomosis. This isolated segment of jejunum, which replaces the ductus choledochus, is anastomosed at its distal end with the stomach or else with the duodenum so that there is not a direct cholecystogastrostomy, but an intestinal "bridge" interposes between the gallbladder and the stomach.

The operation was performed first on dogs, in the Laboratory of Experimental Surgery of the Faculty of Medicine of the National University and later on 6 patients in the San José Hospital of Bogotá. The work was reported on for the first time before the Society of Biology of Bogotá and published later in the *Boletín de la Clínica de Marly*.

The technic devised by Dr. Henao has been favorably commented on by a British scientist, Dr. Ronald W. Raven.

Colombian Conference on Radiology

The first conference on radiology was held at Bogotá, Colombia, March 24-26, 1950, under the auspices of the Colombian Society of Radiology. More than 50 delegates, including radiologists from Bogotá, Medellín, Barranquilla, Cali, Bucaramanga, Ibagué and Armenia, were present. The scientific sessions were held at the National Academy of Medicine and at some hospitals and clinics, and the social activities at the Medical Club. Dr. Gonzalo Esguerra Gómez, honorary president of the Colombian Society of Radiology, made a speech at the inaugural session and pointed out the importance of organization of a college of radiologists. The scientific topics discussed were: electroencephalography, Dr. G. Sierra; teratology, Dr. J. Rosas Cordovez; pulmonary tomography, Dr. D. Marino Zuleta; xanthomatosis, Dr. G. Nascimbene; anti...o-pometric index and transverse diameter of the heart, Dr. Esguerra Gómez; herniation of intervertebral meniscus, Dr. F. Convers; bronchopulmonary segments, Dr. A. Torres Focke; radiopelvimetry, Dr. B. Perez Mejía; prostate and urethra, Dr. C. Elías Pedraza; factors modifying the results of radium therapy in cancer, Dr. S. Londono; lymphosarcoma, Dr. M. Gaitán Yanguas; roentgen therapy of tuberculous adenitis, Dr. A. Flórez; neoplasm of the duodenum, Prof. Oriol Arango; radiologic aspects of calices of the renal pelvis, Dr. J. Medina Medina; anencephalia, Dr. P. Hané; radiology of the skull, Dr. B. Salazar; radiology of the duodenum, Dr. A. Castro Riaño; tumors of the mediastinum, Dr. L. E. Lozano; metabolic craniopathy, Dr. M. Barona; gastroenterology, Dr. Alphonso Jaramillo Arango, and gastroduodenal polyposis, Drs. B. Jiménez and A. Rey Barrera. There was an exhibit of radiologic equipment. Drs. G. Esguerra Gómez and F. Convers presided at the conference. Dr. A. Torres Focke was secretary. The assembly ended on March 26 with a banquet at the Temel Restaurant. Drs. A. Jaramillo Araujo and D. Correa made speeches during the banquet, pointing out the significance of this meeting, which promoted a permanent interchange of ideas and the progress of radiology in the country. The new board of directors is: Dr. D. Correa, president; Dr. R. Uribe Vélez, vice president; Dr. A. Arango Mejía, treasurer; Dr. A. Torres Focke, general secretary, headquarters in Bogotá, and Dr. B. Perez Mejía, regional secretary, headquarters in Medellín. It was decided that the board of directors of the society should convene successively in the important cities of Colombia, Medellín having been selected for the second conference, in 1951.

Renal Circulation

Drs. Luis M. Borrero H., Gonzalo Montes D. and Leonor Martinez have reported their experiments on renal circulation at the Laboratory of Medical Research of the National Faculty of Medicine. They recently presented a preliminary report before the Society of Biology of Bogotá. They measured the glomeruli of the kidneys of dogs to determine the differences in size of the cortical (peripheral) and juxtamedullary (those in the deepest zone of the cortex glomeruli). The Raytand procedure was used, by which small fragments of congealed kidneys of dogs were triturated in a mortar under a pressure of 45 Gm. The pestle was moved laterad and without pressure, for a given period of time, to standardize trauma. A large drop of the suspension was placed on a slide and smoothly extended to obtain thick smears. Reading of the smears was made with the ocular micrometer. The search and measuring were done with magnifications of 50 diameters and a 200 increase, respectively. The total number of measurements was 2,300 on 1,200 glomeruli, as follows: 300 measurements were made on a normal kidney in which no previous injection was made, and 100 malpighian corpuscles from the external, medial and internal thirds of this kidney were measured. An equal number of measurements was made on a normal kidney previously injected with warm gelatin containing minium. The injection was given intra-arterially and with pressure. Six hundred measurements were made on a normal kidney not previously injected. Grouping by frequency was regular in all the measurements. The calculations were made from the direct data of micrometric measurements. Only the characteristic values of the groups were translated into microns. The average values of the measurements were as follows: In normal kidneys the diameters of the glomeruli of the cortex in the external third were between 160 to 168 microns; in the medial third, between 166 and 177 microns, and in internal third, between 157 and 168 microns. In the kidney injected with gelatin containing minium, the diameter in the external third was 204.83 microns, medial third, 211.50 microns, and internal third, 201.92 microns. The authors noted that between the renal corpuscles of a given zone of the kidney, the difference in size is noticeable. These data indicate that the excretory function of the corpuscles are not quantitatively identical. In the three kidneys studied, the glomeruli of the medial third are of the larger size, whereas those of the external and internal thirds are of equal size. The qualitative relations were also noticeable when the corpuscles were observed in thick smears.

New Members of Medical Society

Drs. C. A. Pantoja, R. Serpa and G. Muñoz Rivas were recently elected members of the National Academy of Medicine. Dr. Pantoja is professor of clinical surgery of the faculty of medicine of the National University and director of the National Institute of Radium for diagnosis and treatment of cancer. Dr. R. Serpa is professor of clinical gynecology of the aforementioned faculty and Dr. G. Muñoz Rivas is a technician at the Clinical Laboratory; he has distinguished himself especially in his work on the biology of the Hansen bacillus and the study of fleas as vectors of leprosy. With these three nominations the academy completes its traditional membership of 40 academicians. The National Academy of Medicine was founded in 1872 and given recognition by law 71 of 1890. It is the consultative agency of the national government in matters of medicine and was decorated in 1934 with the Cross of the Order of Boyacá. The academy receives a small subvention from the government for its support.

Correspondence

TRANSFUSION WITH POSITIVE PRESSURE

To the Editor:—In a letter to the Editor in the March 18 issue of THE JOURNAL, under the heading "Transfusion with Positive Pressure," Wiener has criticized the use of positive pressure for increasing the speed of transfusions. Although I have had no experience with the apparatus supplied by a commercial firm mentioned in the letter, I cannot accept unchallenged Wiener's criticism of the use of positive pressure to increase the speed of transfusions.

During the past 25 years I have given between 2,500 and 3,000 transfusions using positive pressure and for a number of years supervised the giving of transfusions by the house staff on the medical wards of the Peter Bent Brigham Hospital, where this method was in routine use. By this means it has been customary to introduce into the patient 500 cc. of blood within seven to 15 minutes. At no time have we encountered any difficulty as the result of the rapid infusion of the blood, and no fatality has occurred as the result of an air embolism.

It is my belief as a result of this experience that the rapid method of infusion, using positive pressure, is the method of choice particularly for the patient who must receive repeated transfusions. The use of the rapid method has several advantages over the slower gravity method. Because of the shorter interval required, the transfusion may be given or supervised throughout by a skilled operator. Transfusion is not a simple procedure without danger to the patient, and there is no more reason that it should be given by inexperienced or unskilled personnel than that a surgical procedure be carried out by other than a trained surgeon. Another important consideration is that of the difference in the psychic trauma produced by the two methods. The relief from fear of transfusions which I have seen in patients after receiving the blood in seven minutes, who have previously been subjected to one to five hours of worry during transfusion by gravity, often unsupervised, is most dramatic.

The present trend toward the infusion of blood, particularly by the gravity method, by technicians, nurses or untrained interns without constant supervision is a deplorable situation fostered largely by the need for "fool-proof" methods in order to spare physician personnel during the late war. The fatal and nearly fatal accidents following transfusions which have come to my attention during the past few years have followed infusion by the gravity method and have, in most instances, occurred because they were given by unqualified personnel. It is the responsibility of the medical profession to see that the same degree of experience and skill be required for the transfusionist as is expected of the physician or surgeon qualified to properly administer the more technical medical or surgical procedures.

WILLIAM P. MURPHY, M.D.,
20 Gloucester Street,
Boston 15.

"CONSTITUTIONAL INFERIORITY"

To the Editor:—In the abstract of discussion of the article on "Neurocirculatory Asthenia," in THE JOURNAL of March 25, Dr. Arthur Master of New York states that patients having this clinical picture are "constitutionally inferior." In the conclusions reached by the authors of the article one reads: "There is no evidence to suggest that patients with this disorder develop, in high prevalence, hypertension, heart disease, peptic ulcer, diabetes mellitus, asthma, thyrotoxicosis, ulcerative colitis, hysteria or schizophrenia." Admitting that patients of this type have a limited environmental adaptability, why should they be "branded" as constitutionally inferior? To be logical, there would be more reason to apply the term to those having hypertension, peptic ulcer or degenerative heart disease, which are some of the conditions not prevalent among persons with neurocirculatory asthenia, and how about the epileptic, the insane and those who carry through life the inheritance of subnormal characteristics? We should start a move to eradicate from medical language the term constitutional inferiority and replace it with a more definite and specific term. Reassurance is said to be a means of helping the patient with neurocirculatory asthenia. It is not easy to sell him this weapon if he happens to know that he is considered hopeless under the concept of constitutional inferiority.

L. G. VERGARA, M.D.,
Albuquerque, N. M.

Medical Motion Pictures

Breast Self Examination. 16 mm., color, sound, showing time 15 minutes. Supervision and sponsorship jointly by the American Cancer Society and the National Cancer Institute. Produced in 1950 by Audio Production, Inc., New York. Procurable on purchase from the American Cancer Society, 47 Beaver Street, New York, or on loan from state cancer societies, state health departments and the regional depots of Association Films, New York, Dallas, Chicago and San Francisco.

This film presents the subject of carcinoma of the breast with reference to early discovery of the tumor by the patient in a concise and sensible manner, clearly enough to be easily understood by a lay audience, yet it cannot fail to be interesting to physicians concerned with the earlier discovery of breast changes by their patients. Throughout the film the importance of the examination by the physician is repeated. A physician introduces the subject, a physician who teaches the woman the method of examination of her own breasts and who emphasizes the importance of periodic check-up. It is impressed on the patient that, should she note any abnormality during the monthly self examination, her physician is the person to pass final judgment in the matter.

Self examination of the breasts once monthly, after the menstrual period, is advised, and a simple method of thorough inspection and palpation is taught. The approach is excellent, since it makes for closer relationship and understanding between physician and patient. The material is presented in a manner to avoid generating cancerphobia. It is made plain that not all lumps are carcinoma and that recourse to the physician and his diagnostic skill is reasoned caution, whereas self diagnosis represents unreasoning fear of cancer.

The film might be adversely criticized for the brevity of note accorded to the aforementioned common sense attitude, to the importance of the unilateral lump and to the use of the term "cure." There are those who hold that "arrested" is preferable to "cured" with respect to carcinoma. The word palpation as used in the script seemed somewhat technical for the audiences which it is hoped this film will reach.

This picture is excellent for physician and layman alike, since its influence should make first the home and then the physician's office a "cancer detection center" for lesions of the breast. Since successful surgical treatment is dependent on early discovery and early accurate diagnosis, it is by such teaching that the appalling cancer death rate may be improved. The film can be highly recommended for lay groups, female college students and nurses. In addition, it would provide an excellent motion picture for the physicians to use in talks to various meetings of such groups. The photography, narration, cast and presentation are outstanding. An illustrated brochure gives a synopsis of the picture and instructions for showing the film. The instructions include the following statements: "The one most helpful thing will be the participation of a doctor. Both the program chairman and the physician should see the film in advance of the meeting."

Bureau of Legal Medicine and Legislation

MEDICOLEGAL ABSTRACTS

Chiropractors: Charge of Obtaining Money by False Pretenses. — The defendants, licensed chiropractors, were charged by information with a conspiracy to obtain money by means of a confidence game and by false pretenses, by pretending that certain roentgenograms made by them demonstrated that the internal organs of the complaining witness were diseased and could be cured by a course of colonic irrigations. Three of the five defendants were found guilty, and from such conviction they appealed to the Supreme Court of Colorado.

All the convicted defendants were licensed practitioners of the ". . . science of locating and removing interference with nerve transmission . . ." as defined by Colorado statute, section 2, chapter 34, 1935 C. S. A., which statute further confers on a licensee ". . . the right to practice chiropractic as defined and to use such other sanitary and hygienic measures necessary to such practice. . . ." The defendants specialized in colonic irrigation along with other chiropractic treatments.

The complaining witness testified that in answer to an advertisement relating to a ten point free examination she went to the defendants' health clinic. One of the defendants placed her in front of a fluoroscope and told her that her liver was all right and then told her that a roentgenogram was required. She was given an enema and the roentgenogram was taken. About ten minutes later another of the defendants discussed the roentgenogram with her and advised her that it looked as though she had a malignant mass on the side, a lot of adhesions at the bottom and ulcers and tumors on the side. She asked the doctor what kind of treatment would be given, and he said it would be a protracted matter and that she would have to take forty-five treatments and at the end of each treatment a roentgenogram. She inquired about surgery, and he said that she could have it if she wished and mentioned a number of surgeons who could perform it. She asked what guarantee the defendant could give that she would be well if she followed his treatment, and he said they could not give any guarantee and told her further that, if she were to take the defendants' treatment and did not get well, she could then submit to operation. The next day she was referred to an osteopathic radiologist who gave her a barium enema and took a roentgenogram using a fluoroscope. He testified at the trial that in his opinion the patient had mild adhesions, that she did not suffer from an ulcerated condition of a portion of the colon and that his examination did not indicate that the complaining witness had a malignant mass. After having received this second diagnosis, the complaining witness went to the office of the district attorney and complained about the treatment received in the defendants' clinic. She then returned to the defendants' office with a representative from the district attorney's office, and the defendant, in interpreting the complaining witness's roentgenogram, made about the same statements to the representative of the district attorney as he had made to the complaining witness.

On appeal the defendants specified some twenty-one points for reversal, but the main points considered by the Supreme Court were whether or not the trial court erred in refusing to direct a verdict of not guilty and whether or not the evidence was sufficient to support a conviction for the crime of conspiracy. Viewed in the most favorable light for the prosecution, said the Supreme Court, the evidence does not disclose any acts of the defendants that apparently were criminal or unlawful; it does emphasize the fact that the defendants were following the prescribed and adopted standards of their profession and that such standards have full recognition in the law. The state of Colorado has licensed the defendants as chiropractors to follow and practice the tenets of their chosen school of thought. Natural sequence includes diagnosis and prognosis, and this is exactly what they were doing.

It is to be assumed, the Supreme Court continued, that the facts surrounding the diagnosis and prescribed treatments of the complaining witness provided the prime occasion for the district attorney to encircle these defendants with the strong arm of the law, and the facts disclosed by her testimony must be considered as of first importance in determining their guilt or innocence. It is glaringly apparent from these facts, said the Supreme Court, that there was no absolute representation made as to efficacy of the treatment and no false promise of a cure. When the complaining witness went to the clinic she undoubtedly expected to get an opinion as to her ailments, which she received. She paid nothing for the roentgen examination, enema, blood test, heart examination or any service rendered her. She relied on nothing that was told her and lent herself to the aid of the plan for this prosecution.

Another witness, a paid informer, employed by the district attorney, testified as to the diagnosis given her by the defendants: that she too was told of four physicians who were equipped to take the roentgenograms. She said one of the defendants stated that he thought the difficulty lay in the colon, and she further testified that the doctor said that their type of treatment, colonic irrigation, "probably would help, that they had helped a lot of other people by their methods of treatment and that it might not be too helpful as to a dropped colon." She paid $3.50 deposit on the roentgenogram that was taken, did not pay anything further and admitted having concealed her history as to medical treatments and operations. She obtained the diagnostic opinion and the suggested treatments, and there was no coercion in connection with the acceptance of the diagnosis or treatment given her.

The testimony of these two witnesses relative to the means charged for carrying out the alleged conspiracy, as well as the testimony of numerous other witnesses of no more indictable character, was before the trial court, said the Supreme Court, and the insufficiency thereof specifically called to its attention by the motion for a directed verdict. There was nothing to sustain the charge in the information other than the opinions of the defendants as to a probable condition of the patients examined. The court should have recognized that an opinion cannot be proved to be false like an allegation of fact. The court also well knew that the prosecution had alleged that the diagnosis and prophecy made by the defendants were false, that the falsity of the diagnosis and prognosis was not proved, but a matter of opinion only. The motion for a directed verdict, the Supreme Court concluded, should have been sustained.

The trial court was in further error, the Supreme Court continued, in unduly limiting the defendants in the offer of evidence to show in actual cases, by witnesses on the stand, the efficacy of the treatments suggested by them, which were alleged to be false and ineffective and used for the purpose of defrauding the public. The efficacy of a medical treatment is to be determined by specific instances of its use. The guilt or innocence of these defendants was not measured by the standards of their own profession. In this, a criminal case, there are many reasons why the rule announced in a prior Colorado Supreme Court case should be followed. In that case it was said, ". . . all that the physician and dentist in this case were required to render in the way of service, in the diagnosis and treatment of their patient, was such a degree of skill and care as is ordinarily possessed by those in the practice of their profession under similar conditions of the patient and in their particular locality. Whether or not this was done can usually be determined only from the opinions of those learned in the same professions." In the present case, there was nothing before the court to show that the defendants went beyond the accepted standards of their adopted theory of practice and treatment. If, in engaging in the practice of a lawful profession, they erred in their judgment, there would be no civil liability, much less criminal liability. Moreover, said the Supreme Court, there was undisputed evidence before the court that there was a standing offer by the defendants for the refund of money paid if the patient was not satisfied with the treatment, and it was clearly shown that, in all cases where requests were made, the money was refunded. It further is significant that this procedure was followed long before the prosecution was started. This one feature of the evidence alone was sufficient to indicate to the court that the charge against the defendants here was devoid of the element

of intent to defraud. All the circumstances on which the prosecution depended to establish a conspiracy were as consistent with innocence as with guilt, and in such circumstances no conviction can lawfully be sustained. Furthermore, it is interesting to note that two of the defendants who gave the colonic irrigations and who collected the money were found not guilty of conspiracy and that one of the defendants found guilty was shown to have been absent from the city during the principal period of time involved in this case.

Accordingly the judgments of conviction entered by the trial court were reversed.—*Chesney et al v. People, 212 P. (2d) 1011 (Colo., 1949).*

Medical Examinations and Licensure

COMING EXAMINATIONS AND MEETINGS

NATIONAL BOARD OF MEDICAL EXAMINERS

NATIONAL BOARD OF MEDICAL EXAMINERS: *Parts I and II.* Various locations, June 19-21. *Part III.* Twenty-nine centers, June 6-29. Exec. Sec., Mr. E. S. Elwood, 225 S. 15th Street, Philadelphia.

EXAMINING BOARDS IN SPECIALTIES

AMERICAN BOARD OF ANESTHESIOLOGY: *Written.* Various locations, July 21. *Oral.* Chicago, Oct. 8-11. Sec., Dr. Curtiss B. Hickcox, 745 Fifth Ave., New York 22.

AMERICAN BOARD OF DERMATOLOGY AND SYPHILOLOGY: *Written.* Various locations, Sept. 14. *Oral.* Detroit, Oct. 20-22. Sec., Dr. George M. Lewis, 60 East 66th St., New York 21.

AMERICAN BOARD OF INTERNAL MEDICINE: *Oral.* San Francisco, June 21-23. The oral examinations in the subspecialties will be held at the same time and places. *Written.* Oct. 16. Asst. Sec., Dr. William A. Werrell, 1 West Main Street, Madison 3, Wis.

AMERICAN BOARD OF NEUROLOGICAL SURGERY: Chicago, Oct. 1950. Applications no longer accepted. Sec., Dr. W. J. German, 789 Howard Ave., New Haven, Conn.

AMERICAN BOARD OF OPHTHALMOLOGY: *Written.* Various Centers, Jan. 5-6, 1951. San Francisco, March 11-15; New York, May 31-June 4. Sec., Dr. Edwin B. Dunphy, 56 Ivie Road, Cape Cottage, Maine.

AMERICAN BOARD OF ORTHOPAEDIC SURGERY: *Part II.* Chicago, Jan. 25-26. Final date for filing applications is Aug. 15, 1950. Sec., Dr. Harold A. Sofield, 122 South Michigan Avenue, Chicago 3.

AMERICAN BOARD OF OTOLARYNGOLOGY: Chicago, October. Sec., Dr. Dean M. Lierle, University Hospital, Iowa City.

AMERICAN BOARD OF PATHOLOGY: St. Louis, Oct. 13-14. Sec., Dr. Robert R. Moore, 507 Euclid Ave., St. Louis 10.

AMERICAN BOARD OF PEDIATRICS: *Written.* San Francisco, June 30-July 2. *Oral.* Chicago, Oct. 13-15 and Boston, Dec. 1-3. Exec. Sec., Dr. John McK. Mitchell, 6 Cushman Road, Rosemont, Pa.

AMERICAN BOARD OF PHYSICAL MEDICINE AND REHABILITATION: *Oral and Written.* Boston, Aug. 26-27. Final date for filing applications is April 1. Sec., Dr. Robert L. Bennett, 30 N. Michigan Ave., Chicago.

AMERICAN BOARD OF PLASTIC SURGERY: *Oral.* May-June. Sec., Dr. Louis T. Byars, 4647 Pershing Avenue, St. Louis, Mo.

AMERICAN BOARD OF PSYCHIATRY AND NEUROLOGY: San Francisco, June 23-24. Applications no longer accepted. Next examination, December 1950. Final date for filing applications is Sept. 1.

AMERICAN BOARD OF RADIOLOGY: *Oral.* Chicago, week of June 18. Sec., Dr. B. R. Kirklin, 102-110 Second Ave., S.W., Rochester, Minn.

AMERICAN BOARD OF SURGERY: *Written.* Various centers, Oct. 25. Final date for filing applications is July 1. Sec., Dr. J. Stewart Rodman, 225 South 15th Street, Philadelphia.

AMERICAN BOARD OF UROLOGY: Chicago, Feb. 10-14, 1951. Final date for filing applications is Sept. 1, 1950. Sec., Dr. Harry Culver, 7935 Sunnyside Road, Minneapolis 21.

BOARDS OF MEDICAL EXAMINERS

ALABAMA: *Examination.* Montgomery, June 27-29. Sec., Dr. D. G. Gill, 519 Dexter Avenue, Montgomery.

ALASKA: * Juneau, Sept. 5. Special examinations given on application. Sec., Dr. W. M. Whitehead, Box 140, Juneau.

ARIZONA: * Phoenix, July 22. Sec., Dr. J. H. Patterson, 316 W. McDowell Road, Phoenix.

CALIFORNIA: *Examination, Written.* San Francisco, June 19-22; Los Angeles, Aug. 21-24; Sacramento, Oct. 16-19. *Examination, Oral and Clinical for Foreign Medical School Graduates.* San Francisco, June 18; Los Angeles, Aug. 20; San Francisco, Nov. 12. *Reciprocity, Oral Examination.* San Francisco, June 17; Los Angeles, Aug. 19; San Francisco, Nov. 11. Sec., Dr. Frederick N. Scatena, 1020 N Street, Sacramento 14.

CONNECTICUT: * *Examination.* Hartford, July 11-12. Sec. to the Board, Dr. Creighton Barker, 160 St. Ronan St., New Haven. *Homeopathic.* Derby, July 11-12. Sec., Dr. Donald A. Davis, 38 Elizabeth St., Derby.

DELAWARE: *Examination.* Dover, July 11-13. *Reciprocity.* Dover, July 20. Sec., Dr. J. S. McDaniel, 229 S. State St., Dover.

FLORIDA: * Jacksonville, June 25-27. Sec. Dr. Frank D. Gray, 12 N. Rosalind Avenue, Orlando.

GEORGIA: *Examination.* Atlanta and Augusta, June. *Endorsement.* Atlanta, June. Sec., Mr. R. C. Coleman, 111 State Capitol, Atlanta 3.

HAWAII: *Examination.* Honolulu. July 10-13. Sec., Dr. I. L. Tilden, 1020 Kapiolani St., Honolulu.

IDAHO: Boise, July 10. Sec., Mr. Armand L. Bird, 305 Sun Bldg., Boise.

INDIANA: *Examination.* Indianapolis, June. Sec., Dr. Paul R. Tindall, 1138 K. of P. Bldg., Indianapolis.

MAINE: *Examination and Reciprocity.* Augusta, July 11-12. Sec., Dr. Adam P. Leighton, 192 State St., Portland.

MARYLAND: *Examination.* Baltimore, June 20-23. Sec. Dr. Lewis P. Gundry, 1215 Cathedral Street, Baltimore 1, *Homeopathic.* Baltimore, June 20-21. Sec., Dr. John A. Evans, 612 W. 40th St., Baltimore.

MASSACHUSETTS: *Examination.* Boston, July 11-14. Sec., Dr. George L. Schadt, Room 37, State House, Boston 33.

MINNESOTA: * *Written. Examination,* Minneapolis, June 20-22. Sec., Dr. J. F. Du Bois, 230 Lowry Medical Arts Building, St. Paul 2.

MISSISSIPPI: Jackson, June 20-21. Asst. Sec., Dr. R. N. Whitfield, Jackson 113.

NEVADA: *Endorsement.* Carson City, August 7. Sec., Dr. George H. Ross, 112 Curry Street, Carson City.

NEW HAMPSHIRE: Concord, Sept. 13. Sec., Dr. John Samuel Wheeler, 107 State House, Concord.

NEW JERSEY: *Examination.* Trenton, June 20-23. Sec., Dr. E. S. Hallinger, 28 West State Street, Trenton.

NEW MEXICO: * Santa Fe, Oct. 9-10. Sec., Dr. Charles J. McGoey, Coronado Building, Santa Fe.

NEW YORK: *Examination.* Albany, Buffalo, New York and Syracuse, June 27-30. Sec., Dr. Jacob L. Lochner, Jr., 23 S. Pearl St., Albany.

NORTH CAROLINA: *Written.* Raleigh, June 19-22. *Endorsement.* Morehead City, July 22. Sec., Dr. Ivan Procter, 226 Hillsboro Street, Raleigh.

NORTH DAKOTA: *Examination.* Grand Forks, July 5-7. *Reciprocity.* Grand Forks, July 8. Sec., Dr. C. J. Glaspel, Grafton.

OREGON: * *Examination.* Portland, July 6-8. *Endorsement,* Portland, July 28-29. Sec., Mr. Howard I. Bobbitt, 609 Failing Building, Portland.

PENNSYLVANIA: *Examination.* Philadelphia and Pittsburgh, July 11-14. Act. Sec., Mrs. Marguerite G. Steiner, 351 Education Bldg., Harrisburg.

PUERTO RICO: *Examination.* Santurce, Sept. 5. Sec., Mr. Luis Cueto Coll, Box 3717, Santurce.

RHODE ISLAND: * *Examination.* Providence, July 6-7. Sec., Mr. Thomas B. Casey, 366 State Office Building, Providence.

SOUTH CAROLINA: *Examination.* Columbia, June 26-29. *Reciprocity.* First Monday of each month. Sec., Dr. N. B. Heyward, 1329 Blanding Street, Columbia.

SOUTH DAKOTA: * Sioux Falls, July 18-19. Sec., Dr. C. E. Sherwood, 300 First National Bank Bldg., Sioux Falls.

TEXAS: * *Examination.* Austin, June 19-21. Sec., Dr. M. H. Crabb, 1714 Medical Arts Bldg., Fort Worth 2.

UTAH: *Examination.* Salt Lake City, June. Dir., Dr. Frank E. Lees, 324 State Capitol Building, Salt Lake City.

VIRGINIA: *Examination.* Richmond, June 23-24. *Endorsement.* Richmond, June 22. Sec., Dr. K. D. Graves, 631 First St., S.W., Roanoke.

WASHINGTON: * Seattle, July 17-19. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

WEST VIRGINIA: *Examination.* Charleston, July 10-12. Sec., Dr. N. H. Dyer, Capitol Bldg., Charleston .

WISCONSIN: * Milwaukee, July 11-13. Sec., Dr. C. A. Dawson, River Falls.

---

* Basic Science Certificate required.

BOARDS OF EXAMINERS IN THE BASIC SCIENCES

ALASKA: *Examination.* Juneau, last week in August. Sec., Dr. C. Earl Albrecht, Box 1931, Juneau.

ARIZONA: *Examination.* Tucson, June 20. Sec., Mr. Francis A. Roy, Science Hall, University of Arizona, Tucson.

COLORADO: *Examination.* Denver, Sept. 13-14. Sec., Dr. Esther B. Starks, 1459 Ogden St., Denver 3.

IOWA: *Examination.* Des Moines, July 11. Sec., Dr. Ben H. Peterson, Coe College, Cedar Rapids.

MICHIGAN: *Examination.* Ann Arbor, Oct. 13-14. Sec., Miss Eloise LeBeau, 101 North Walnut Street, Lansing 15.

NEBRASKA: *Examination.* Omaha, Oct. 3-4. Director, Mr. Oscar F. Humble, Room 1009, State Capitol Building, Lincoln 9.

NEW MEXICO: *Examination.* Santa Fe, Sept. 17. Sec., Mrs. Marguerite K. Cantrell, Box 1522, Santa Fe.

OKLAHOMA: *Examination.* Oklahoma City, Sept. 15. Sec., Dr. Clinton Gallaher, 813 Braniff Building, Oklahoma City.

RHODE ISLAND: *Examination.* Providence, August 9. Chief, Division of Professional Regulation, Mr. Thomas B. Casey, 366 State Office Building, Providence.

TENNESSEE: *Examination.* Memphis, July 7-8. Sec., Dr. O. W. Hyman, 874 Union Ave., Memphis 3.

TEXAS: *Examination.* Austin, October. Sec., Brother Raphael Wilson, 306 Nalle Building, Austin.

WASHINGTON: *Examination.* Seattle, July 12-13. Director, Department of Licenses, Mr. Edward C. Dohm, Olympia.

CURRENT MEDICAL LITERATURE

AMERICAN

The Association library lends periodicals to members of the Association and to individual subscribers in Continental United States and Canada for a period of five days. Three journals may be borrowed at a time. Periodicals are available from 1939 to date. Requests for issues of earlier date cannot be filled. Requests should be accompanied with stamps to cover postage (6 cents if one and 18 cents if three periodicals are requested). Periodicals published by the American Medical Association are not available for lending but can be supplied on purchase order. Reprints as a rule are the property of authors and can be obtained for permanent possession only from them.

Titles marked with an asterisk (*) are abstracted below.

American Journal of Diseases of Children, Chicago

79:205-408 (Feb.) 1950

Prevalence of Rheumatic Heart Disease at High Altitudes. B. G. Wedum, W. Darley and P. H. Rhodes.—p. 205.
Acute Conjunctivitis Caused by Hemophilus. D. J. Davis and M. Pittman.—p. 211.
Epilepsy in Twins: Analysis of Five Twin Pairs, with Electroencephalographic Studies. S. C. Little and N. K. Weaver.—p. 223.
*Bronchopulmonary Mycosis: Simultaneous Primary Occurrence in 4 Children and Their Mother with Subsequent Healing by Diffuse Miliary Calcification; Twelve Year Observation. B. M. Hamil.—p. 233.
*Treatment of Edema in Disease of Kidney. H. H. Boyle and L. E. Jackson.—p. 272.
Six Examples of Precocious Sexual Development: II. Studies in Growth and Maturation. H. P. G. Seckel.—p. 278.
Fluoroacetate Poisoning: Review and Report of Case. D. C. Gajdusek and G. Luther.—p. 310.

Bronchopulmonary Mycosis.—Hamil discovered bronchopulmonary mycosis in 4 children and their mother. Records have been accumulated during a period of twelve years of the onset and progress of bronchopulmonary mycosis in the 4 siblings and their mother, with recovery in all of the children. The mother died of a fatal accident. The incriminated organisms, Monilia (candida) pinoyi and Aspergillus niger probably reached the respiratory tract of these patients from a common source, possibly grain and hay dust and contaminated chicken feathers. It is assumed that the organisms became pathogenic as the result of an attack of "grippe" or influenza. The subsequent course of the disease in the children was protracted because of inadequate early treatment. Massive doses of potassium iodide orally, sodium iodide intravenously and inhalations of ethyl iodide were followed by progressive healing. The fluffy parenchymal nodules, characteristic of the roentgenograms in all the patients, healed through fibrosis to scattered, complete, dense miliary calcification. The first appearance of calcium in all the patients was about three years after the onset of acute symptoms. Serial blood cell counts and sedimentation rates showed characteristic changes similar to those observed in tuberculosis. Repeated tests of skin reaction to intradermal injection of various stock fungi and bacterial vaccines and to autogenous M. pinoyi and A. niger vaccines indicated the extent of allergic response to heterologous fungi but also showed the more specific response to the autogenous organisms. Complement fixation and agglutination reactions were obtained. Progressive roentgenologic changes over ten years of observation indicate the complete healing of the pulmonary lesions consistent with the present good state of health of the 4 siblings.

Edema in Disease of Kidney.—Boyle and Jackson adhered to the differentiation between nephrosis and chronic nephritis outlined by Aldrich—the absence of hematuria, hypertension and azotemia in nephrosis and their presence in chronic nephritis. This rule cannot be rigidly employed in all patients. When a child with nephrosis begins to have occasional blood cells in the urine or occasional slight elevation of the nonprotein nitrogen level, these conditions will become more persistent and the child will have chronic nephritis with severe renal damage and eventual death. Such a change will usually occur within the first few months of illness. A group of 15 children with severe edematous states associated with kidney disorders were followed by the authors during the past two years. The treatment of edema consisted of the acid-ash regimen, which implies a liberal use of fluids, about 50 cc. per pound (0.5 Kg.) of body weight daily, and acidification by drugs, such as ammonium chloride or potassium chloride in glycyrrhiza syrup. Dilute hydrochloric acid, 5 drops in a glass of water, was given three to four times daily. Acid fruit juices, such as cranberry, plum and prune, were given, since other juices yield an excess of alkaline ash. An acid ash, high protein diet consisted chiefly of meat, chicken, fish, eggs and cereals. Sodium chloride intake was restricted to 1 or 2 Gm. daily, which implied eliminating it from cooking. Nephrosis responded to this treatment better than did nephritis; 7 of the patients with chronic nephritis died within one year. Substantial amounts of fluids were cleared from the tissues of 5 patients with nephrosis. Edema usually returned with recurring infections, but it cleared rapidly following control of infection with penicillin or sulfadiazine therapy. Diuretic effect was not seen until eight to twenty days after the regimen was started. The authors believe that control of edema and greater comfort of the patient justify the use of this regimen.

American J. Obstetrics and Gynecology, St. Louis

59:237-474 (Feb.) 1950. **Partial Index**

Radical Panhysterectomy, Pelvic Lymph Node Excision, Total Vaginectomy and Total Cystectomy: One-Stage Operation for Carcinoma of Female Genitals Invading Bladder: (Report of 21 Cases). A. Brunschwig, M. J. Jordan and V. K. Pierce.—p. 237.
*Retrolental Fibroplasia: Hazard of Premature Birth. H. Speert, F. C. Blodi and A. B. Reese.—p. 246.
Value of X-Ray Therapy in Amenorrhea and Sterility Associated with Endometrial Hyperplasia. S. A. Wolfe.—p. 259.
*Treatment of Early Carcinoma of Cervix Uteri. J. A. Corscaden.—p. 272.
*Carcinoma of Cervix (University Hospitals, 1926-1942). J. H. Randall, W. C. Keettel, H. C. Willumsen and J. W. Scott.—p. 285.
Pregnancy and Labor Experiences of Elderly Primigravidas. E. G. Waters and H. P. Wager.—p. 296.
Major Gynecologic Operations in Patient over 50 Years of Age. J. C. Weed and J. R. Mighell.—p. 305.
Effect of Adoption on Fertility and Other Reproductive Functions. F. M. Hanson and J. Rock.—p. 311.
Emotional Factors in Gynecology. F. S. Rogers.—p. 321.
Psychosomatic Factors in Functional Amenorrhea. W. S. Kroger and S. C. Freed.—p. 328.
Septic Abortion Kidney. J. P. Wyatt and H. Goldenberg.—p. 337.
Study of Native Species of Male Toads as Test Animals in Diagnosis of Early Human Pregnancy. P. F. McCallin and R. W. Whitehead.—p. 345.
Use of Male Frog (Rana Pipiens) in Biological Pregnancy Test. H. L. Gardner and N. B. Harris.—p. 350.
Monozygous and Dizygous Twins in Study of Human Heredity. M. T. Macklin.—p. 359.
Vaginal Hysterectomy and Colpectomy for Prolapse of Uterus and Bladder. J. T. Williams.—p. 365.
Frequency of Rh Anamnestic Reaction During Pregnancy. C. L. Schneider.—p. 371.
Pheochromocytoma Complicating Pregnancy. G. L. Bowen, D. J. Grandin, E. E. Julien and S. Krech Jr.—p. 378.
Uterine Cervix During Pregnancy. E. J. Murphy and P. A. Herbut.—p. 384.

Retrolental Fibroplasia and Premature Birth.—Speert, Blodi and Reese discuss pathologic changes in the eyes of prematurely born infants. These changes lead to formation of a grayish white connective tissue membrane in the anterior vitreous. Useful vision is impaired and partial or total blindness results in most cases because the disorder is usually bilateral. The descriptive name for this condition is retrolental fibroplasia. The authors investigated 104 pregnancies which resulted in the development of this condition. The incidence of the disorder appears to be increasing. Ninety-six per cent of the affected children were born prematurely. The sexes of the children

were about equally divided. Seventeen of the pregnancies resulted in multiple births, including two sets of triplets. There is a strong indication that both children were affected in all monozygotic pregnancies, while only one was affected in the dizygotic pregnancies. Cutaneous hemangiomas were associated with retrolental fibroplasia in a proportion of cases significantly higher than the expected incidence. Maternal infections and other complications during pregnancy, with the possible exception of rubella, had no etiologic relation to retrolental fibroplasia in the child. Similarly irrelevant were maternal medication during pregnancy and labor, type of delivery, maternal serologic test for syphilis, and her Rh factor. In addition to the obvious role of prematurity, available evidence suggests the probable importance of genetic factors and, occasionally, environmental factors such as maternal rubella. No satisfactory treatment is known for the condition; efforts to reduce its incidence must lie primarily in the prevention of premature birth.

Treatment of Early Carcinoma of the Cervix.—Corscaden states that at the Sloane Hospital for Women in New York, the League of Nations Classification of cancers has been employed, except that stage 1 of cervical carcinoma has been subdivided, because it included lesions of varying extent. The use of intracavitary radium combined with external roentgen irradiation has been followed by steadily improving results, reaching in the most recent reports a level of around 70 per cent five year survivals in carcinoma of stage 1 (League of Nations) and of 40 per cent in all cases (absolute). In 149 patients treated in the Sloane Clinic during 1939 to 1943, there was an absolute survival of 43 per cent (46 per cent relative), and of 76 per cent (83 per cent relative, i. e., excluding patients not followed and those dying of intercurrent disease) in stage 1. Radical (Wertheim) hysterectomy was abandoned twenty years ago because of high mortality and a low cure rate. Considerable improvement in results will be necessary before the revived radical operation can be offered as a substitute for intracavity radium combined with roentgen irradiation. To accomplish this improvement the operation must be performed by surgeons with exceptional operative facilities. Unless the procedure is thorough it will fail as of old. The author believes that the standard treatment of cancer of the cervix is that of intracavity radium combined with external roentgen therapy.

Carcinoma of Cervix.—Randall and associates report on 983 patients with cervical carcinoma treated at the University of Iowa Hospitals from 1926 to 1942. Irradiation was employed almost exclusively, but a few patients were treated surgically. From 1926 to 1931 patients were given one or more applications of radium, followed by short courses of high voltage roentgen therapy. The plan of therapy was changed in 1931 so that a course of high voltage roentgen therapy to the pelvis was given first and was followed immediately or a few weeks later by radium application to the local lesion. Another course of high voltage roentgen therapy was given eight to twelve weeks later if the skin could tolerate it. The present method of treatment was instituted in 1937. It consists of a course of high voltage roentgen radiation to the pelvis through six to eight skin portals. The dosage to each portal at any one treatment is 200 r measured in air. The total dosage varies from 10,000 to 25,000 r (air). The average dosage delivered to the parametrial regions is 3,500 to 4,000 r. Radium is applied locally late in the course of roentgen irradiation or at its conclusion. Two 25.0 mg. tubes of radium screened with 1.5 mm. of platinum and 1.0 mm. of rubber are placed in tandem in the uterine cavity, and six 10.0 mg. tubes screened with 1.5 mm. of platinum are placed against the cervix in a brass block. The absolute five year survival rate has been 30.4 per cent. The absolute five year survival rate during the years 1926 to 1937 was 25.7 per cent, but it has increased to 37.0 per cent for the years 1937 to 1942. The most important single factor in end results is the stage of the disease. The histologic character of epidermoid carcinomas has little effect on final results. Patients who are young or senile and those who are febrile or have an inverting type of growth generally respond less to irradiation. Complications are inevitable when irradiation is given to the limits of tolerance. There is a primary mortality of 1 to 2 per cent from irradiation treatment of cervical cancer to the point of tissue tolerance.

American Journal Physiology, Baltimore

160:1-216 (Jan.) 1950. **Partial Index**

Hemoglobin Iron as Stimulus for Production of Ferritin by Kidney. J. K. Hampton Jr. and H. S. Mayerson.—p. 1.
Comparison of Effects of Sodium Pentobarbital or Ether-Induced Anesthesia on Rate of Flow and Cell Content of Rat Thoracic Duct Lymph. G. F. Hungerford and W. O. Reinhardt.—p. 9.
Mechanism of Hypotension Following Intravenous Injections of Strongly Hypertonic Solutions. W. W. Walcott and I. J. Deyrup.—p. 15.
Comparison of Protein Anabolic Property of Various Androgens in Castrated Rat. C. D. Kochakian.—p. 53.
Effect of Desoxycorticosterone Acetate and Adrenal Cortical Extracts on Survival of Adrenalectomized and Intact Rats After Burning. S. S. You and E. A. Sellers.—p. 83.
Mechanism of Extracellular Sodium and Chloride Depletion in Adrenalectomized Dog. J. B. Flanagan, A. K. Davis and R. R. Overman.—p. 89.
Production of Diabetes in Mouse by Partial Pancreatectomy. F. Pauls and R. W. Bancroft.—p. 103.
Effects of Ligation of Pancreatic Duct upon Action of Secretin and Pancreozymin in Rabbits with Correlated Histological Study. C. C. Wang, K. J. Wang and M. I. Grossman.—p. 115.
Effect of Temperature upon Survival of Eviscerate Rat. D. J. Ingle and J. E. Nezamis.—p. 122.
Oxygen Transport and Utilization in Dogs at Low Body Temperatures. W. G. Bigelow, W. K. Lindsay, R. C. Harrison and others.—p. 125.
Interrelationship of Cardio-Respiratory Events in Anoxia. M. Brucer, G. L. Herman and H. G. Swann.—p. 138.
Coronary Blood Flow and Cardiac Oxygen Consumption in Unanesthetized Dogs. F. C. Spencer, D. L. Merrill, S. R. Powers and R. J. Bing.—p. 149.
Direct Determination of Partial and Total Tensions of Respiratory Gases in Blood. A. Roos and H. Black.—p. 163.
Effect of Auricular Fibrillation on Coronary Blood Flow. R. Wégria, R. P. Keating, H. P. Ward and others.—p. 177.
Comparison Between Cardiac Input Measured with Rotameter and Output Determined by Direct Fick Method in Open-Chest Dogs. R. A. Huggins, E. L. Smith and M. A. Sinclair.—p. 183.
Convulsions in Cerebellum and Cerebrum Induced by Beta-Chlorinated Amines. G. H. Pollock and J. A. Bain.—p. 195.
Sympatholytic Effects of Quinine and Quinidine. E. P. Hiatte.—p. 212.

American Journal of Psychiatry, New York

106:561-640 (Feb.) 1950. **Partial Index**

*Thyroid Function in Mental Disease Measured with Radioactive Iodine, I^{131}. K. M. Bowman, E. R. Miller, M. E. Dailey and others.—p. 561.
Characteristics and Screening of Unsatisfactory Psychiatric Attendants and Attendant-Applicants. N. S. Kline.—p. 573.
Psychiatric Implications of Civil Defense. D. C. Cameron.—p. 587.
Psychiatrist and Psychotic Psychopath: Study in Interpersonal Relations. B. A. Cruvant and L. Yochelson.—p. 594.
Art as Psychotherapy. P. Taylor.—p. 599.
Problems of Institutional Care of the Aged. D. A. Boyd Jr.—p. 616.
Psychiatric Medical Education Among Negro Physicians. H. J. Erwin.—p. 624.

Thyroid Function in Mental Disease.—Bowman and his associates report studies on the thyroid function of patients with mental disease and of controls, as measured by the uptake of the radioactive isotope of iodine (I^{131}) by the thyroid gland and compared with serum protein-bound iodine, basal metabolic rate and plasma cholesterol level. These four tests represent the most widely accepted methods for evaluating thyroid function. Data are given on 24 patients and 12 controls. The average basal metabolic rates were somewhat low, the average plasma cholesterol levels somewhat high. The serum protein-bound iodines fell within the normal range. The uptake of I^{131} was widely distributed, but, except in 1 patient, fell within the normal range. In no case did the uptake curves resemble the types found in myxedema or thyrotoxicosis. No significant difference has been found between patients and controls. The results obtained by the authors differed from those in many reports in the past of low basal metabolic rate in mental patients compared with normal controls and of low plasma cholesterol levels in schizophrenic patients. The authors likewise found no change in thyroid function in patients during or after insulin shock, electroshock, combined shock or psychotherapy. Thyroid medication, however, produced profound alterations in the results of all 4 tests in the 2 patients on whom study has been completed. There has been insufficient analysis of the rate of I^{131} uptake; the authors have dealt primarily with the maximum concentration of I^{131} accumulated in the thyroid gland after a test dose. Results suggestive of some abnormality have been found in 2 manic-depressive patients. Both patients had a decided drop in their radioactive iodine uptake curve as they improved during electroshock therapy.

American Review of Tuberculosis, New York

61:159-298 (Feb.) 1950

*Streptomycin-Promizole Therapy of Miliary and Meningeal Tuberculosis in Children. E. M. Lincoln and T. W. Kirmse.—p. 159.
Effect of Streptomycin upon Pathology of Tuberculous Meningitis. W. J. Winter.—p. 171.
Tuberculous Bronchitis in Pulmonary Resection: Incidence in 58 Pulmonary Resections for Tuberculosis. M. G. Buckles and W. B. Neptune.—p. 185.
Use of Gelatin Foam (Gelfoam) in Thoracoplasties. G. A. Hedberg, W. D. Seybold and O. T. Clagett.—p. 193.
Studies on Respiratory Gas Exchange in 100 Anthracite Coal Miners with Pulmonary Complaints. H. L. Motley, L. P. Lang and B. Gordon. —p. 201.
Para-Aminosalicylic Acid Treatment of Tuberculosis: Review. E. Bogen, R. N. Loomis and D. W. Will.—p. 226.

Streptomycin-Promizole® Therapy of Miliary and Meningeal Tuberculosis in Children.—Lincoln and Kirmse treated 13 children between the ages of 3 months and 11 years with miliary tuberculosis and 21 children between the ages of 9 months and 11 years with tuberculous meningitis, with streptomycin combined with promizole® (4,2′-diaminophenyl-5′-thiazolyl sulfone). The patients with miliary tuberculosis were given 1 Gm. of streptomycin daily by the intramuscular route for one hundred and twenty days. The sulfone drug was given by mouth four times daily in amounts sufficient to obtain concentrations in the blood of 1 to 3 mg. per hundred cubic centimeters. The daily dose varied from 1 to 8 Gm. Patients with tuberculous meningitis were given 1 Gm. of streptomycin daily by the intramuscular route in two divided doses. Streptomycin was given intrathecally once daily in 0.1 Gm. doses until toxic symptoms or mechanical difficulties arose; the dosage then was reduced to 0.05 Gm. daily, or every two days, until a total of forty intrathecal injections was completed. Promizole® was administered in the same manner as for miliary tuberculosis. Eleven patients with miliary tuberculosis and 16 patients with tuberculous meningitis survived. Three patients with meningitis relapsed; 1 of these died. There was little evidence of toxic reactions to the sulfone drug except for cyanosis and slight enlargement of the thyroid. Ataxia was the most constant toxic reaction to streptomycin. Early recognition of tuberculous meningitis and intensive intrathecal therapy are important factors in survival. The location of the lesion, the sensitivity of the micro-organisms and possibly the age of the patient are important in the prognosis. Four of the 5 patients whose deaths resulted from meningitis were less than 14 months of age and in a moderate to far advanced stage of the disease when treatment was started. Combined streptomycin and promizole® therapy appears to have improved the results and is worthy of more extensive clinical trial.

Anesthesiology, New York

11:1-144 (Jan.) 1950

Tissue Distribution with Time After Single Intravenous Administration of Pentothal Sodium (Sodium Ethyl [1-Methylbutyl] and Pentothal S^{35} Thiobarbiturate). J. L. Bollman, L. M. Brooks, E. V. Flock and J. S. Lundy.—p. 1.
Effect of Dibenamine on Cyclopropane-Epinephrine Arrhythmias. N. R. J. McMillen, L. J. Hampton and V. A. Drill.—p. 8.
Use of Peridural and Subarachnoid Injections of Saline Solution in Treatment of Severe Postspinal Headache. G. G. Rice and C. H. Dabbs.—p. 17.
Effects of Various Anesthetic Agents on Protoplasm. W. Seifriz. —p. 24.
Surital Sodium: New Anesthetic Agent for Intravenous Use. Preliminary Clinical Evaluation. M. Helrich, E. M. Papper and E. A. Rovenstine.—p. 33.
Group Practice in Anesthesia. H. M. Ausherman.—p. 41.
Organization and Operation of Blood Bank and Intravenous Service. R. M. Tovell and T. Walker.—p. 47.
Anesthesia from Viewpoint of Thoracic Surgeon. J. W. Strieder.—p. 60.
Use of Pontocaine Hydrochloride for Nerve Block and Infiltration Analgesia, Therapeutic, and Diagnostic Blocks: 1,004 Cases. D. C. Moore. —p. 65.
Relationship of Various Anesthetic Agents to Action of Pituitrin, Pitressin and Pitocin. C. P. Parsloe, L. E. Morris and O. S. Orth. —p. 76.
Problems for Anesthetist When Extreme Relaxation is Needed for Patient with Toxemia of Pregnancy. A. McNeal.—p. 96.
Regurgitation and Aspiration of Gastric Contents During Inhalation Anesthesia. W. A. Weiss.—p. 102.
Obstetrics for Anesthesiologist. B. A. Greene and M. Goldsmith.—p. 110.
How to Make Inflatable Cuff for Intratracheal Tube. S. Whitehouse, T. H. Seldon and J. R. Peterson.—p. 120.

Annals of Surgery, Philadelphia

131:129-288 (Feb.) 1950

*Systemic Bacitracin in Treatment of Progressive Bacterial Synergistic Gangrene. F. L. Meleney, P. Shambaugh and R. S. Millen.—p. 129.
*Chronic Relapsing Pancreatitis Treatment by Subtotal Gastrectomy and Vagotomy. A. Richman and R. Colp.—p. 145.
Intestinal Obstruction: Protective Action of Sulfasuxidine and Sulfathalidine to Ileum Following Vascular Damage. E. J. Poth and J. N. McClure Jr.—p. 159.
Esophageal Arteries: Their Configurational Anatomy and Variations in Relation to Surgery. A. L. Shapiro and G. L. Robillard.—p. 171.
Simultaneous Cervical and Thoracic Approach for Resection of Carcinoma in Upper Fourth of Esophagus: Report of Case with Cervical Esophagogastric Anastomosis. H. W. Scott Jr. and C. R. Hanlon. —p. 186.
*Continuous Lumbar Sympathetic Block for Treatment of Acute Arterial Occlusion and Other Vascular Diseases of Lower Extremity. J. E. Ruben.—p. 194.
Sarcomatous Tranformation in Multiple Neurofibromatosis (Von Recklinghausen's Disease): Report of Four Cases. J. Herrmann.—p 206.
Reconstruction of Deformed Arthritic Hand. O. C. Kestler.—p. 218.
Gallstone Intestinal Obstruction. E. V. Denneen and T. C. Broderick. —p. 225.
Metastatic Melanoma of Brain: Report of Case with Unusually Long Survival Period Following Surgical Removal. V. Reyes and G. Horrax. —p. 237.
Giant Fibro-Adenoma of Breast—"Cystosarcoma Phyllodes." J. R. McDonald and S. W. Harrington.—p. 243.
Ligation of Inferior Vena Cava During Pregnancy. R. L. Young and R. C. Derbyshire.—p. 252.
Congenital Aneurysm of Superior Vena Cava: Report of One Case with Operative Correction. O. A. Abbott.—p. 259.
Primary Splenic Hematocytopenia: Case Report. H. H. Romack, N. Krumdieck and D. M. Vickers.—p. 264.
Epidermoid Cyst of Spleen: Report of Case. M. Radakovich.—p. 268.
Segmental Ileitis; Possibly Caused by Bacterium Necrophorum. J. G. Matt.—p. 277.
Synovial Sarcoma of Chest Wall: Report of Case. R. B. Eisenberg and R. C. Horn.—p. 281.

Bacitracin in Treatment of Gangrene.—Meleney and co-workers treated 5 patients with progressive bacterial synergistic gangrene with bacitracin. Four of the patients had not responded to penicillin therapy. Penicillin was not given to the fifth patient because of a previous allergic response. The patients illustrated the disease from its earliest development, before the occurrence of extensive destruction of skin, to a late stage, in which, after four months, all of the lower abdomen, the flanks and the upper portions of the thighs were involved. The patients exhibited typical clinical symptoms of progressive bacterial synergistic gangrene, which depends on the coincident presence of a Staphylococcus capable of producing gangrene in tissues already inflamed by the nonhemolytic microaerophilic Streptococcus. The essential causative agents were found in 3 of the patients. The microaerophilic nonhemolytic Streptococcus escaped recovery in the remaining 2 patients, probably because of overgrowth by secondary contaminants. All 5 patients responded promptly to bacitracin administered intramuscularly in doses of 10,000 to 24,500 units every six hours. Treatment was continued for 11 to 30 days with a total dose of 1,078,000 to 2,160,000 units. Bacitracin was also used locally in a concentration of 500 to 1,000 units per cubic centimeter, with a total dose of 78,000 to 357,000 units. Surgical excision was obviated in all 5 patients. The defect was restored by the growth of epithelium from the residual islands left in the outward spread of the gangrenous process in 4 patients, and only in the fifth patient was it necessary to use skin grafts. Systemic bacitracin therapy started in a dosage of 400 units per kilogram of body weight every six to eight hours is the treatment of choice for progressive bacterial synergistic gangrene.

Chronic Relapsing Pancreatitis.—Richman and Colp report 3 cases of chronic relapsing pancreatitis in 2 men aged 45 and 34 and in 1 woman aged 52. Chronic relapsing pancreatitis represents the sum of repeated attacks of acute pancreatitis resulting from heightened secretory activity, which may be accompanied with obstruction of the pancreatic ducts, leading to an excessive pressure within the ducts and producing either diffusion of the enzyme into the parenchyma or a rupture of the radicles. Alcoholism was a causative factor in the 2 men, and biliary tract disease was present in 1 man and in the woman. All patients had the important disabling features of pancreatitis: pain, diarrhea and dyspepsia. The diagnosis of chronic pancreatitis was made by biopsy of the pancreas in each case. After subtotal gastrectomy of the Bilroth 2 type, 2 patients were relieved of their symptoms. The third patient

obtained relief from pain but experienced pronounced aggravation of his diabetes mellitus, resulting in death in diabetic coma. This corroborates the concept that structural damage to the pancreas is permanent, but the pathologic cycle, which will eventually lead to transformation of the pancreas into a calcified functionless mass and to chronic invalidism, is apparently arrested by subtotal gastrectomy. The rationale of this treatment is the lessened production of hydrochloric acid and further neutralization of acid by the regurgitation of the alkaline contents of the duodenum through the gastroenteric stoma. As a result secretin formation is diminished; hence the lessened volume of pancreatic juice does not distend the pancreatic ducts. Pain is thereby relieved. Vagotomy was combined with subtotal gastrectomy in 2 of the patients; it may act to further minimize pancreatic secretion.

Continuous Lumbar Sympathetic Block.—Ruben treated 48 patients with various peripheral vascular diseases of the lower extremity with a new method of continuous lumbar sympathetic block. A spinal catheter is inserted 5 to 6 cm. into the epidural space through the sacral hiatus. Ten cubic centimeters of 1 per cent procaine hydrochloride are injected through the catheter. The catheter is then connected to a 1,000 cc. flask of 0.1 per cent procaine hydrochloride in isotonic sodium chloride solution by way of an ordinary intravenous drip infusion set. The continuous block is maintained for as long as seems clinically necessary. Thrombophlebitis requires a minimum of 24 hours, and one patient was treated for 164 hours continuously. The strength of the procaine solution may be increased to 0.3 per cent, 0.5 per cent and even 1 per cent when treatment must be prolonged. Ten of the 48 patients had acute arterial occlusion, 4 had arterial spasm, 7 had chronic arterial occlusion and 27 had thrombophlebitis. In 2 patients with acute arterial occlusion the continuous lumbar sympathetic block seems to have been important in preserving the limb without operation; in many of the other cases the results were better than those obtained with other methods of lumbar sympathetic block. The method requires no elaborate equipment and is safe. It is useful for patients suffering from arterial embolus who, for one reason or another, cannot be subjected to embolectomy.

Archives of Neurology and Psychiatry, Chicago

63:195-356 (Feb.) 1950

Relation of Migraine to Cerebral Aneurysm. K. Frankel.—p. 195.
Phenomena of Sensory Suppression. A. R. Furmanski.—p. 205.
Course and Symptoms of Progressive Infantile Muscular Atrophy: Follow-Up Study of 112 Cases in Denmark. S. Brandt.—p. 218.
Incidence of Psychomotor Epilepsy in Army Psychiatric Consultation Service. R. J. Kahana and R. C. Robertiello.—p. 229.
*Mesantoin® in Treatment of Epilepsy: Report on 200 Patients Under Treatment for Periods Ranging from Two Months to Four Years. H. L. Kozol.—p. 235.
Neurologic Complications Following the Mantoux Test. F. T. Mérei.—p. 249.
Poliomyelitis: III. Bulbar Poliomyelitis; Study of Medullary Function. A. B. Baker, H. A. Matzke and J. R. Brown.—p. 257.
Leptomeningeal Changes Associated with Lipochondrodystrophy (Gargoylism): Report of Case. K. R. Magee.—p. 282.
Cytopathology of Brain and Reticuloendothelial Organs in Allergic Encephalitis in Guinea Pigs. B. Campbell and R. A. Good.—p. 298.

Mesantoin® in Epilepsy.—Mesantoin® (3-methyl-5, 5-phenylethylhydantoin) appears to be a valuable addition to the drugs which have been proved effective in the treatment of epilepsy. Kozol has the impression that it is the most effective antiepileptic agent available. Many epileptic patients who had failed to respond satisfactorily to previous medicaments, including phenobarbital and diphenylhydantoin sodium, responded remarkably to mesantoin.® Kozol reports on 200 epileptic patients treated with this drug for periods ranging from two months to four years. There was an average improvement of 90 per cent as judged by a reduction in the frequency of the seizures and of 75 per cent as judged by an increase in the longest interval between seizures. Even better results were obtained in certain categories of patients. Twelve and one-half per cent of the patients in this series were not helped by the drug. There were wide individual variations in dosage. Some adults could tolerate only 0.3 or 0.4 Gm. daily or required only that much for satisfactory control of their seizures; other adults took or required as much as 1.8 Gm. (eighteen tablets daily). No death ascribable to the drug has appeared in this series. Since this report was submitted for publication, 2 deaths presumably ascribable to this agent have come to the author's attention. One case was that of a fulminating bullous dermatitis with fatal gastrointestinal hemorrhage in a boy 13 years of age who had received less than 2 Gm. of mesantoin® in two weeks. The other was that of a woman aged 34 with a history of several suicidal attempts and hospitalizations for a mental disorder who had taken the drug erratically and irregularly; she died of aplastic anemia.

Archives of Otolaryngology, Chicago

51:149-306 (Feb.) 1950

*Ménière's Syndrome: Observations on Vitamin Deficiency as Causative Factor; III. General Disturbance. M. Atkinson.—p. 149.
Stricture of Esophagus Associated with Operation for Duodenal Ulcer. G. D. Straus.—p. 165.
Mucocele of Frontal and Ethmoid Sinuses: Evaluation of Use of Acrylics and Tantalum in Surgical Treatment. S. Kaplan, A. Schwartz and B. F. Metson.—p. 172.
Thrombosis of Cavernous Sinus: New Evaluation and Report of Case with Recovery. L. K. Elfman.—p. 188.
Chronic Indurative (Cervical Myalgic) Headache. R. W. Stevens.—p. 196.
Mechanics of Nose, with Special Reference to Nasopharyngeal Discharge. G. E. Tremble.—p. 205.
Influence of Electric Punch Card Machines on Human Ear. H. Ribeiro de Almeida.—p. 215.
Oncocyte in Nasal Mucous Membrane: Study of Unusual Epithelial Cell. J. G. Schoolman.—p. 223.
Cranial Chordoma. J. Freeman.—p. 237.
Fistula Auris Congenita. J. B. Miller and P. M. Moore Jr.—p. 245.

Ménière's Syndrome and Vitamin Deficiency.—Atkinson points out that, although the ear is the presenting organ and is responsible for the classic triad of symptoms characteristic of Ménière's syndrome, some general disturbance is also present. It is for this reason that therapeutic measures directed toward the ear alone, such as inflation of the eustachian tube, are rarely effective, even in controlling the attacks of vertigo, and surgical procedures, though they may abolish the acute attacks of vertigo, do not restore the patient's hearing or health or control of progress of the disease. Present day medical therapy for this condition, whether directed toward altered water metabolism and electrolyte balance or toward vasospasm by means of nicotinic acid, tacitly admits the fact of this general disturbance. The author presented in a previous communication evidence which points to a deficiency of specific factors of the vitamin B complex as responsible for the vestibular and cochlear manifestations: a deficiency of nicotinic acid in the vasoconstrictor group of cases, of riboflavin in the vasodilator group and of a combination of both in the large mixed group, while thiamine also plays a general role in determining the integrity of the function of nerve tissue. These three deficiencies can explain also the diverse manifestations of general disturbance associated with Ménière's syndrome. The author classifies the general symptoms according to the different systems involved: the nervous system, eyes, gastrointestinal tract, locomotor system, cardiovascular system and the skin and mucous membranes. He lists the symptoms according to specific deficiencies in nicotinic acid, riboflavin and thiamine. He presents the histories of two patients to show the severe degree of chronic deficiency and consequent general ill health from which many patients suffer, in addition to their aural disturbance, and to show the length of time and the high dosage of vitamin preparations required to restore them to a normal state of health. He concludes that these observations form another link in the chain of evidence pointing to Ménière's syndrome as a nutritional disturbance.

Archives of Physical Medicine, Chicago

31:71-120 (Feb.) 1950

Administration of Physical Medicine Department, Los Angeles County Hospital, During 1948 Poliomyelitis Epidemic. E. Austin, O. L. Huddleston and A. G. Bower.—p. 71.
Mirror for Use on Respirators. E. Austin, O. L. Huddleston, R. Nygren and A. G. Bower.—p. 74.
Physical Medicine Procedures in Care of Respirator Patients: Measures Used in the Los Angeles County Hospital During 1948 Poliomyelitis Epidemic. E. Austin, O. L. Huddleston and A. G. Bower.—p. 76.
Relationship Between Body Position and Application of Muscle Power to Movements of Joints. H. H. Clarke, E. C. Elkins, G. M. Martin and K. G. Wakim.—p. 81.
Objective Recording of Muscle Strength. K. G. Wakim, J. W. Gersten, E. C. Elkins and G. M. Martin.—p. 90.
Practical Foot Problems. J. E. Brown.—p. 101.

California Medicine, San Francisco

72:79-132 (Feb.) 1950

WHAT'S NEW IN PEDIATRICS? A PANEL DISCUSSION

Communicable Diseases. E. G. Knouf.—p. 79.
Rheumatic Fever. R. G. Shirley.—p. 85.
Treatment of Erythroblastosis. C. J. Molony.—p. 89.
Paroxysmal Tachycardia in Infancy. E. B. Levine.—p. 91.
Fractures and Dislocations of Carpus. K. Speed.—p. 93.
*Cancer Detection Centers: Experience to Date in California. L. H. Garland.—p. 99.
Physiologic Basis of Nasal Operations. A. C. Hilding.—p. 103.
Dihydrogenated Alkaloids of Ergot in Treatment of Peripheral Vascular Diseases. R. J. Popkin.—p. 108.
Endometriosis. W. K. Lamb.—p. 113.

Cancer Detection Centers.—According to Garland 2,479 persons (2,137 women and 342 men) were examined in four cancer detection clinics of California in the course of three years. Not more than 5 cases of cancer were detected in persons without symptoms. All the other cancers detected were in persons with frank tumors in the lip or breast or in persons with symptoms such as bloody vaginal or rectal discharge, who sought free or part-pay diagnosis and treatment. Three of the four centers have been closed because of the small yield of cancer cases plus the fact that the cost of operation exceeded the total available funds of the local branch of the Cancer Society. In addition, it was extremely difficult to obtain and maintain competent professional staff members in such centers. A more practical approach to the problem of earlier tumor detection would appear to be emphasis on making "every physician's office a detection center" and on the annual examination of persons over 40 years of age for tumors in the accessible sites, such as skin, lip, breast and cervix. These are the tumors most readily curable today.

Cincinnati Journal of Medicine

31:1-28 (Jan.) 1950

Drugs Used for Control of Pain. R. N. Bieter.—p. 1.

31:29-56 (Feb.) 1950

Progress in Cancer Research and Control. J. R. Heller.—p. 29.

Gastroenterology, Baltimore

14:1-200 (Jan.) 1950

SYMPOSIUM ON LIVER DISEASE

Radioactive Phosphorus as Indicator of Rate of Phospholipide Formation in Patients with Liver Disease. D. Cayer and W. E. Cornatzer.—p. 1.
Serum Globulin Fractions as Index of Hepatic Dysfunction. M. A. Spellberg, C. Cohn, W. Q. Wolfson and C. Shore.—p. 11.
Clinical Experience with Colloidal Red Test. H. Ducci.—p. 20.
Electrophoretic Studies in Liver Disease. H. A. Rafsky, M. Weingarten, C. I. Krieger and others.—p. 29.
Relation of Portal Vein Pressure to Formation of Ascites—Experimental Study. W. Volwiler, J. H. Grindlay and J. L. Bollman.—p. 40.
*Needle Biopsy of Liver: III. Experiences in Differential Diagnosis of Jaundice. F. G. Weisbrod, L. Schiff, E. A. Gall and others.—p. 56.
Fat Absorption in Young and Old Age. G. H. Becker, J. Meyer and H. Necheles.—p. 80.
Life Situations, Emotions and Colonic Function. W. J. Grace, S. Wolf and H. G. Wolff.—p. 93.
Use of Streptomycin in Gastrointestinal Tuberculosis. W. R. Johnson, R. E. Moyer and W. S. Schwartz.—p. 109.
*Management of Chronic Regional Ileitis. E. D. Kiefer, S. F. Marshall and M. P. Brolsma.—p. 118.
Configuration and Relations of Stomach During Gastroscopy. E. D. Palmer and E. L. Rea.—p. 131.
New Diagnostic Criterion for Gastric Syphilis. H. Berger.—p. 147.

Needle Biopsy of Liver.—Weisbrod and co-workers performed needle biopsies of the liver on 157 patients with jaundice, which was due to virus hepatitis in 64, proved extrahepatic obstructive jaundice in 17, probable extrahepatic obstructive jaundice in 13, hepatic cirrhosis in 29, malignant neoplasm of the liver in 16 and miscellaneous causes in 18. Two features of a consistent cytologic pattern varying with the duration of the lesion were evident in all instances of virus hepatitis. These were severe and universal round cell infiltration in the portal zones and focal intralobular necrosis. The polygonal liver cells usually but not invariably were decidedly swollen, becoming balloon-like in the severe forms of hepatitis associated with more than minimal parenchymatous necrosis. Bile stasis was the preeminent lesion noted in biopsy specimens from patients with extrahepatic biliary obstruction. Trapping of bile is the fundamental process manifested by the presence of inspissated bile plugs in both intercellular and intracellular canaliculi. Ultimately there was disruption of the minute biliary pasasges, and small pools (or lakes) of bile appeared in the centers of the foci. These "bile lakes" are highly characteristic of severe obstruction. The initial interpretations of the biopsies were erroneous or inconclusive in 9 of the 64 patients with virus hepatitis. The errors, which were most common in patients with mild jaundice or those biopsied in the third or fourth week of jaundice or later, may be attributed to the inconspicuous intralobular lesions and prominent periportal changes which simulate the pericholangitis of obstructive jaundice. Only one error was made in the initial pathologic interpretation of the 17 proved and 13 probable cases of obstructive jaundice. Periportal changes due to pericholangitis plus focal areas of necrosis were erroneously ascribed to hepatitis. The initial biopsy interpretations were correct in all 29 cases of hepatic cirrhosis with jaundice and in 15 of 16 cases of malignant neoplasm of the liver with jaundice. A second biopsy was positive in the sixteenth case. Diagnosis by biopsy was much more reliable than the results of the combined cephalin flocculation test, thymol turbidity and serum alkaline phosphatase determinations in the various forms of jaundice studied. Errors in differentiating virus hepatitis from obstructive jaundice are more apt to occur late in the course of virus hepatitis or in the milder cases of the disease. The structural changes encountered within the first two weeks of obstructive jaundice may be wrongly ascribed to virus hepatitis.

Chronic Regional Ileitis.—Kiefer and co-workers report on 159 patients with chronic regional ileitis, 33 of whom were treated medically and 126 surgically. Twenty-four of the 33 patients had localized ileitis and 9 had widespread ileitis. Five of the 24 patients were relieved and remained well from five to eleven years. One additional patient had some partial disability but was improved. Eighteen were unrelieved or had early exacerbation of symptoms, and surgical treatment was advised. Follow-up of the 9 patients with widespread ileitis showed that 4 had been in good health for three to nine years. Two were much improved, although they had some disability. Two patients continued to be invalids, and 1 patient died from the disease. Radical resection of the diseased intestine along with its mesentery and adjacent lymph nodes was preferred rather than exclusion operations such as enteroenterostomy and enterocolostomy. One hundred and two postresection cases were followed over two years. Recurrent ileitis was diagnosed or suspected in 43 and confirmed by laparotomy in 21. The clinical and roentgenologic evidence was so convincing in 13 that the diagnosis of recurrent disease seemed to be unequivocal. "Probable recurrent ileitis" was diagnosed in the remaining 9 cases. Thus the recurrence rate was at least 34 per cent in the patients treated by surgical resection. Medical management should be given a thorough trial in all cases of localized uncomplicated ileitis and in all cases with involvement too extensive to permit surgical resection. In addition to the usual supportive measures medical therapy should include a prolonged period of sanatorium care or its equivalent. Surgical resection is indicated for all cases complicated by obstruction, fistulas, abscesses and granulomatous masses and for cases which prove to be intractable on a medical regimen. The recurrence of the disease in one third of the resected cases indicated that surgical treatment alone is inadequate and that additional measures are necessary. A prolonged postoperative period of medical management, including the newer antibiotics and a rest cure of six months or longer, might reduce the incidence of recurrences. If medical treatment does not control or arrest the disease further surgical treatment may be indicated. The total resected small intestine should not exceed 72 inches (210 cm.) as estimated by the surgeon before removal. The condition of the remaining small bowel should be taken into consideration in planning the surgical attack.

Geriatrics, Minneapolis

5:1-54 (Jan.-Feb.) 1950

Essentials of Geriatric Examination at 50. C. W. Crampton.—p. 1.
Hypertensive Heart Disease in Older Patients. G. F. Greco.—p. 15.
Anesthesia in the Aging Group. W. A. Weiss.—p. 26.
Splenectomy in Elderly People. A. Blaustein.—p. 30.
Psychology in Everyday Geriatrics. R. Ginzberg.—p. 36.

Journal of International College of Surgeons, Chicago

13:139-248 (Feb.) 1950

Reversal of Biochemical Processes in Cases of Cochlear and Vestibular Dysfunction. S. J. Kopetzky.—p. 139.
Surgical Management of Malignant Lesions of Colon. C. J. Hunt. —p. 172.
Extrapleural Pneumolysis with Methyl Methacrylate (Lucite) Plombage. C. N. Abbott.—p. 177.
Experimental Studies on Vascularization of Bony Calluses. S. Teneff. —p. 186.
Solitary Diverticulitis of Cecum: Simple Method of Management. J. P. Cangelosi and L. G. Khedroo.—p. 192.
Adenocarcinoma and Carcinoid of Appendix. G. Q. Lee and J. H. Blain. —p. 197.
Rectosigmoidectomy with Anastomosis in Carcinoma of Rectum and Rectosigmoid. R. R. Best.—p. 203.
Modified Treatment of Appendical Stump. F. C. Guzman and O. J. Reyes.—p. 209.
Androgens in Incurable Breast Cancer. T. C. Davison and A. H. Letton.—p. 215.
Facts About Transversalis Fascia: Surgeon's Viewpoint. S. A. Zieman. —p. 224.

Journal of Lab. and Clinical Medicine, St. Louis

35:167-330 (Feb.) 1950

Protein Alteration in Portal Cirrhosis as Determined by Electrophoresis. J. F. Whitman, H. R. Rossmiller and L. A. Lewis.—p. 167.
Systemic and Portal Venous Pressures in Cirrhosis of Liver. C. S. Davidson, T. B. Gibbons and W. W. Faloon.—p. 181.
In Vitro Sensitivity of Coliform Bacilli to Seven Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin, and Chloromycetin). P. F. Frank, C. Wilcox and M. Finland.—p. 188.
In Vitro Sensitivity of Bacillus Proteus and Pseudomonas Aeruginosa to Seven Antibiotics (Penicillin, Streptomycin, Bacitracin, Polymyxin, Aerosporin, Aureomycin, and Chloromycetin). P. F. Frank, C. Wilcox and M. Finland.—p. 205.
*Treatment of Pneumococcic Pneumonia with Aureomycin. H. F. Dowling, M. H. Lepper, H. H. Hussey and others.—p. 215.
*Studies on Rheumatic Fever: Comparative Value of Weltmann Serocoagulation Reaction and Sedimentation Rate (Cutler) in Determining Activity of Rheumatic Process. H. G. Nelson and J. R. Seal.—p. 220.
Influence of Urinary *p*H on Renal Excretion of Salicyl Derivatives During Aspirin Therapy. W. S. Hoffman and C. Nobe.—p. 237.
Comparative Effects of Water, Carbonated Water, Sodium Chloride Solution, and Sodium Bicarbonate Solution on Gastric Acid Secretion in Human Subjects. E. H. Hale, A. C. Ivy and M. I. Grossman. —p. 249.
Clinical Study of Use of Nitrogen Mustard Therapy in Polycythemia Vera. C. L. Spurr, T. R. Smith, M. Block and L. O. Jacobson. —p. 252.
Progesterone and Anhydrohydroxyprogesterone: Comparative Study of Oral Administration. W. Bickers.—p. 265.
Acute Effect of 4-Aminopteroylglutamic Acid on Blood Lymphocytes and Lymphatic Tissue of Intact and Adrenalectomized Mice. J. H. Daugherty and T. F. Daugherty.—p. 271.
Artifactual Values of Serum Precipitable Iodine. E. B. Man and J. P. Peters.—p. 280.
Effects of Pyribenzamine on Respiration of Mouse Brain Homogenates. T. F. Hubbard and L. R. Goldbaum.—p. 284.
Cardiac Lesions Following Venous Catheterization of Right Auricle and Coronary Sinus of Dogs. W. G. Banfield, D. B. Hackel and W. T. Goodale.—p. 287.

Aureomycin in Pneumococcic Pneumonia.—Dowling and co-workers treated 174 patients with pneumonia with aureomycin. The patients were given either 250 mg. of aureomycin by mouth every three hours or 500 mg. at six hour intervals until the temperature dropped and remained within normal limits for 48 to 72 hours. The average total dose was 12 Gm. There were 2 deaths among the 131 patients with typed pneumococcic pneumonia and 2 deaths among the 43 patients with pneumonia which was presumably pneumococcic, although no pneumococci were recovered. The fatality rate was lower and the temperature dropped more rapidly in the patients treated with aureomycin than in 686 patients previously treated by the authors with penicillin. Aureomycin is at least as effective as penicillin in pneumococcic pneumonia.

Studies on Rheumatic Fever.—Nelson and Seal compared the results of Weltmann serocoagulation reaction and Cutler erythrocyte sedimentation rate with the state of activity of the rheumatic process adjudged clinically in 400 naval patients between the ages of 18 and 25, with or convalescent from rheumatic fever. Of a total of 2,552 observations made on these 400 men, the Weltmann reaction was correlated with the clinical status 97.2 per cent of the time, as against a correlation of 86.6 per cent for the Cutler sedimentation rate. Forty-six patients exhibited rheumatic activity during the study, and in them the Weltmann reaction was correlated with the clinical status 93 per cent of the time, or against a Cutler sedimentation rate correlation of 90 per cent of the time during periods of activity. The respective correlations during periods of inactivity on these patients were 99 per cent for the Weltmann reaction and 93 per cent for the sedimentation rate. Of a total of 1,857 observations on 350 patients who did not exhibit rheumatic activity, the Weltmann reaction was correlated 98.1 per cent of the time and the sedimentation rate 85.9 per cent of the time with the clinical observations. The Cutler sedimentation rate correlation was raised to 92.2 per cent by excluding the 22 patients who had four or more abnormal sedimentation rates. Results for certain patients were significantly important in the greater percentage of discrepancies which occurred in the sedimentation rate. These patients were those who failed to show expected increases of the sedimentation rate during periods of activity and those who exhibited persistently elevated sedimentation rates following the cessation of activity. Similar persistent discrepancies between the Weltmann reaction and the clinical course of the patient were not observed. The Weltmann reaction is of particular value as complimentary to the sedimentation rate in the handling of large numbers of rheumatic patients. It is also of particular value where discrepancies between the sedimentation rate and the clinical course leave the physician undecided as to the state of activity of the rheumatic process in his patient.

Journal of Pediatrics, St. Louis

36:143-270 (Feb.) 1950

*Effect of Inherited Antibodies on Active Immunization of Infants. L. Greenberg and D. S. Fleming.—p. 143.
Health and Growth of Aleut Children. E. Wilde.—p. 149.
Use of Phenurone in Treatment of Epilepsy. S. Livingston and L. Kajdi.—p. 159.
Tonic-Neck-Reflex and Symmetro-Tonic Behavior: Developmental and Clinical Aspects. A Gesell and L. B. Ames.—p. 165.
Blood Sugar Values in Premature Infants. M. A. Norval.—p. 177.
Pre-Eruptive Neurological Complications of Common Contagious Diseases —Rubella, Rubeola, Roseola and Varicella. P. B. Holliday Jr.—p. 185.
Urinary Lysozyme: III. Lysozymuria in Children with Nephrotic Syndrome. A. T. Wilson and W. P. Hadley.—p. 199.
Incidence of Congenital Impatency of Nasolacrimal Duct. E. L. Kendig Jr. and DuP. Guerry III.—p. 212.
Thrombosis of Renal Vein in Infants. C. Q. McClelland and J. P. Hughes.—p. 214.
Table Unit for Fluoroscopic Examination of Infants. M. M. Maliner. —p. 228.
*Congestive Heart Failure in Utero: Case Report with Necropsy Findings. G. E. Rader and R. D. Goodman.—p. 230.
Friedländer's Pneumonia with Multiple Lung Abscesses: Recovery Following Use of Streptomycin and Aureomycin. S. Gruber, R. D. Turin, S. D. Sternberg and H. Rascoff.—p. 237.
*Potassium Bromate Poisoning: Report of Case. H. F. Robertson, M. W. Flothow Jr. and M. D. Kissen.—p. 241.
Juvenile Thyrotoxicosis Treated with Propyl Thiouracil and Two Subtotal Thyroidectomies. L. D. Altman.—p. 244.

Inherited Antibodies and Immunization of Infants.—Until recently it was generally accepted that infants under 6 months of age did not respond well to active immunization, but it is now known that infants as young as 1 month respond well to immunization. Greenberg and Fleming obtained complete records on 105 of 148 children, infants chosen at random from healthy children attending the clinics of the Child Health Association of Montreal. Prior to inoculation, the serums were titrated individually for diphtheria antitoxin and, when the supply of serum permitted, for tetanus antitoxin and pertussis agglutinins. After the blood sampling each child received a course of three 0.5 cc. injections, spaced four weeks apart, of an alum-precipitated preparation containing diphtheria toxoid, tetanus toxoid and pertussis vaccine. Four weeks after the final inoculation a blood sample was taken and the serums again titrated for the specific antibodies. The authors stress the following points: 1. Active immunization of infants 3 and 4 months of age against diphtheria, whooping cough and tetanus appears to be a sound procedure. 2. The presence of inherited antibody has some effect in depressing the response to diphtheria toxoid, but in this series it was not great enough to prevent satisfactory immunization. The average diphtheria antitoxin titer of serums taken after immunization from infants with inherited antibody was 0.51 units per cubic centimeter, whereas the average of the group lacking inherited antibody was 0.92 units. Thus satisfactory immunization of infants can be achieved by using highly potent toxoids. 3. Wide variations exist in the immunizing efficiency of available diphtheria and

tetanus toxoids, and the potency of these products should be more strictly controlled. 4. The response to tetanus toxoid was satisfactory. 5. The results of immunization with pertussis vaccine are less certain, because the blood samples were taken before the maximum response was reached. However, 96 per cent of the children did show a response, as indicated by the development of pertussis agglutinins.

Congestive Heart Failure in Utero.—Rader and Goodman state that a male infant weighing 4 pounds, 10 ounces (2,098 Gm.) was admitted to the Premature Station of the Los Angeles County Hospital three hours after birth. The infant presented at delivery generalized pitting edema involving the scalp, face, trunk and extremities plus massive ascites. Breathing was labored, with moderate cyanosis. An immediate abdominal paracentesis was performed in view of the respiratory and circulatory distress. More than 250. cc. of peritoneal fluid were drained, and there was an immediate improvement in the infant's breathing and color. After admission to the Premature Station the infant was placed in a heated bed and given oxygen, vitamin K, penicillin, pharyngeal suction, caffeine and whiffs of spirits of ammonia. His condition remained unchanged for approximately thirty-six hours. He then had recurrent episodes of cyanosis with periods of apnea, and he died after forty-six hours of life. The authors conclude that the clinical and necroptic observations are consistent with congestive heart failure in utero. They believe that when a newborn infant presents a generalized edema, the possibility of congestive heart failure should be considered in addition to erythroblastosis fetalis and other causes.

Potassium Bromate Poisoning with Cold Wave Neutralizer.—Robertson and his associates report that a girl aged 14 was hospitalized six hours after she had ingested the neutralizer substance of a cold wave material. She had intermittent attacks of vomiting, persistent hiccup, mild periumbilical pain and oliguria. The psychiatric examination revealed the patient to be of a psychopathic personality type with strong suicidal drives. Emergency treatment consisted of gastric lavage with 2 per cent sodium bicarbonate solution; intravenous methylene blue (1 mg. per kilogram of body weight in 1 per cent aqueous solution), and 3 Gm. sodium thiosulfate by vein. Because of the acute gastritis, she was given nothing by mouth for the first thirty-six hours, and a satisfactory electrolyte balance was maintained by means of intravenously given saline solution, dextrose and sixth-molar solution of sodium lactate. All symptoms had subsided at the time of discharge, twenty-three days later. A follow-up study six weeks after discharge revealed normal clinical and urinary conditions. The authors point out that several cases of poisoning with this substance were reported in children and stress that this danger from home use of cold wave permanents should be called to the attention of the medical profession.

Kansas Medical Society Journal, Topeka

51:1-48 (Jan.) 1950

Duties of the Future Anesthesiologist. J. W. Pender.—p. 1.
Care of Hand Injuries. Prepared by Committee on Trauma, American College of Surgeons.—p. 4.
Incidence and Titres of Agglutinins for Brucella Abortus and P. Tularensis in Sera of 843 Students. N. P. Sherwood, C. M. Downs, W. R. Miller and R. I. Canuteson.—p. 6.
Trichinosis: Report of Case. W. M. Tate and J. A. Wheeler.—p. 11.

51:49-100 (Feb.) 1950

*Tropical Disease Infections Among Veterans. T. T. Mackie.—p. 49.
Duplication of Alimentary Tract: Report of Case in Small Intestine. G. F. Helwig and W. M. Mills.—p. 54.
Management of Pregnancy in Diabetic Patient. T. J. Sims.—p. 56.
Hermaphrodism, Case Report. C. E. Robinson and E. H. Atkin.—p. 60.

Tropical Diseases Among Veterans.—Two years' experience in the Tropical Disease Clinic of the Regional Office of the Veterans Administration, Winston-Salem, N. C., convinced Mackie that many veterans have handicapping but curable infections. Many draw disability allowances for correctible conditions because of erroneous diagnosis. The essence of the problem lies in the difficulty the individual veteran experiences in obtaining either accurate diagnosis or competent treatment of tropical infections. Too often the clinical symptoms are accepted as evidence of psychoneurosis, because most medical practitioners in this country are unfamiliar with this group of diseases and technicians in diagnostic laboratories are seldom adequately trained in medical parasitology. The importance of tropical infections among veterans lies in the effects of the chronic infection on the individual and not in any hazard of spread. In the author's experience chronic infections by Endameba histolytica constitute the major problem. The solution of the problem for the individual veteran is in the hands of the general practitioner.

Maine Medical Association Journal, Portland

41:1-28 (Jan.) 1950

Care of the Newborn. S. J. Clifford.—p. 1.
Present-Day Treatment of Schizophrenia. M. Marquardt.—p. 7.
Present Status of Our Commitment Laws. F. S. Broggi.—p. 13.
Anesthesia for Cesarian Section. P. B. Thomas and C. S. Dwyer.—p. 17.
Problem of Hospital Care for Indigent Patient in Maine. F. T. Hill.—p. 19.

Mental Hygiene, Albany, N. Y.

34:1-176 (Jan.) 1950. **Partial Index**

International Amity Begins at Home. J. R. Rees.—p. 1.
Normality and Psychosomatic Illness. J. T. McLaughlin.—p. 19.
Mental-Hygiene Aspects of Social Promotion. J. B. Gordon.—p. 34.
The Community and the Aggressive Child: Aggressive-Destructive Impulses in the Sex Offender. G. E. Gardner.—p. 44.
Experiences in a Prison Camp as Background for Therapy. C. J. Katz.—p. 90.
Need of New Facilities for Care of Disturbed Children. F. Clothier.—p. 97.
Current Trends in Child-Guidance Clinics. J. F. Robinson.—p. 106.

New York State Journal of Medicine, New York

50:241-368 (Feb. 1) 1950. **Partial Index**

SYMPOSIUM: CONTROL OF PAIN
Newer Analgesic Methods and Agents of Value in Control of Pain. E. M. Papper and E. A. Rovenstine.—p. 281.
Relief of Pain by Surgical Therapy. J. Browder.—p. 286.
Program for Prematurely Born Infants in New York City. L. Baumgartner.—p. 289.
Modification of Benzidine Occult Blood Test. H. Elcaness.—p. 293.
Rational Therapy for Common Colds and Nasosinusitis. M. Unger.—p. 295.
*Intravenous Quinidine Therapy for Auricular Flutter Resulting in 1:1 Auricular Flutter and Other Changes. H. Blinder, J. Burstein, W. Horwitz and E. Gersh.—p. 298.
Re-Emphasis of Ausculatory Method for Ascertaining Size of Liver. S. H. Rinzler.—p. 300.
Insulating Effect of Mastoid Process on Bone Conduction. E. M. Pullen.—p. 301.
Simultaneous Occurrence of Plasma Cell Multiple Myeloma and Hodgkin's Disease. B. B. Greenberg, D. Stats and M. Goldberg.—p. 305.
*Animal Charcoal as Substitute for Antabuse in Treatment of Alcoholism. G. L. Moench.—p. 308.
Considerations of Morphology and Metabolism in Malignant Neoplasia. M. M. Black, H. Bolker and I. S. Kleiner.—p. 309.
Prevention of Massive Necrosis in Acute Hematogenous Osteomyelitis with Staphylococcus Aureus Sepsis. J. Kavee and F. S. Coleman.—p. 316.
Metrazol and Electric Stimulation as Diagnostic Aids in Epilepsy. T. Meltzer and E. L. Reder.—p. 319.
Mercuhydrin Administration by Subcutaneous Injection. A. Koffler and J. J. Brenner.—p. 323.

Intravenous Use of Quinidine.—Blinder and his associates say that during a study of the effects of intravenously given quinidine on a series of normal and abnormal hearts there occurred an interesting alteration of auricular flutter. The administration of 0.65 Gm. of quinidine intravenously converted a 2:1 auricular flutter, with an auricular rate of 286 per minute, to a 1:1 auricular flutter with an auricular and ventricular rate of about 195 per minute. There also occurred an intraventricular conduction disturbance, so that the electrocardiographic results could easily be confused with those of ventricular tachycardia. At the time of the conversion to 1:1 auricular flutter in this case and in another case there were alarming symptoms of collapse. These symptoms, occurring five to ten minutes after the administration of quinidine, were probably due to the sudden rapid ventricular rate and the known hypotensive effect of the drug. An identical dose of quinidine administered intramuscularly produced prolongation of the transmission time of the auricles without symptoms of collapse. The authors believe that intravenous administration of quinidine is contraindicated except in emergencies, such as ventricular tachycardia, that do not respond to oral or intramuscular administration of the drug.

Animal Charcoal as Substitute for Antabuse.®—Moench says that the description of the symptoms resulting from the use of antabuse® impressed him, because he had noted identical vasomotor symptoms (minus nausea, vomiting and loss of consciousness) when alcohol was taken after previous medication with animal charcoal. He had reported this in 1918 and in 1923. He has verified his observation on volunteers and has repeatedly observed the symptoms on patients, who failed to heed warnings against drinking alcoholic beverages when taking animal charcoal. He has also used charcoal in persons with alcoholism without issuing a warning, at times with good results. The action of animal charcoal is not immediate. A single dose followed by alcohol never had any effect. Usually medication for two to three days was necessary before the vasomotor effects occurred. Even minimal amounts of alcohol produced the typical reaction. Since antabuse apparently is not entirely innocuous, it may be of value to know that animal charcoal (never wood charcoal) will have exactly the same effect with less danger of toxic manifestations.

Pennsylvania Medical Journal, Harrisburg

53:1-96 (Jan.) 1950

Infections of Newborn and Premature Infant. S. H. Clifford.—p. 25.
The Sex Deviate. E. E. Mayer.—p. 32.
Tuberculosis as Complication of Silicosis. C. H. Marcy.—p. 39.
Carcinoma of Colon and Rectum: Modern Trends in Management. J. W. Stinson and A. V. Casillo.—p. 41.
Tuberculosis in Infants: Report of Two Cases. W. C. McCarthy and J. C. Henthorne.—p. 44.

Proc. Soc. Exper. Biol. & Med., Utica, N. Y.

73:1-152 (Jan.) 1950. **Partial Index**

Nutrition of Animal Cells in Tissue Culture: I. Initial Studies on Synthetic Medium. J. F. Morgan, H. J. Morton and R. C. Parker.—p. 1.
Vitamin B_{12} and the Intrinsic Factor. D. E. Wolf, T. R. Wood, J. Valiant and K. Folkers.—p. 15.
Vitamin B_{12} in Amino Acid Metabolism. L. W. Charkey, H. W. Wilgus, A. R. Patton and F. X. Gassner.—p. 21.
Action of Aureomycin and Chloromycetin in Virus of Primary Atypical Pneumonia. M. D. Eaton.—p. 24.
*Effect of Choline as Lipotropic Agent in Treatment of Human Coronary Atherosclerosis. L. M. Morrison and W. F. Gonzales.—p. 37.
Portal Blood in Collateral Veins of Patients with Cirrhosis. Acetylation by Intestine. S. H. Blondheim and H. G. Kunkel.—p. 38.
Estrogen-Inactivation by Liver as Modified by Dietary Protein. J. W. Jailer and L. Seaman.—p. 70.
Reduced Absorption of Aureomycin Caused by Aluminum Hydroxide Gel (Amphojel). B. A. Waisbren and J. S. Hueckel.—p. 73.
Cultivation of Mengo Encephalomyelitis Virus in Embryonated Hen Egg. G. W. A. Dick.—p. 77.
Effect of Desoxycorticosterone Acetate on Insulin Sensitivity in Diabetes Mellitus. H. J. Zimmerman, A. E. Parrish and L. K. Alpert.—p. 81.
*Production of Hypertension in Rat by Substituting Hypertonic Sodium Chloride Solutions for Drinking Water. L. A. Sapirstein, W. L. Brandt and D. R. Durry.—p. 82.
Use of Radioactive Phosphorus to Determine Volume of Blood Replaced in Replacement Transfusion. R. J. Soberman, J. R. Krevans and R. P. Keating.—p. 87.
Insulin Content of Pancreatic Juice. W. B. Neal Jr., L. R. Dragstedt, G. Rogers and others.—p. 95.
Appearance of Protein Tagged with Radioactive Iodine in Thoracic Duct Lymph. H. Krieger, W. D. Holden, C. A. Hubay and others.—p. 124.

Choline as Lipotropic Agent in Coronary Atherosclerosis.—Morrison and Gonzales inaugurated a study of the lipotropic action of choline in 230 patients in whom acute coronary thrombosis with myocardial infarction was demonstrated by serial electrocardiograms, history, laboratory tests and physical examination. One hundred and fifteen of the patients served as controls. They were followed three years but were not given choline. The other group of 115 patients represented those who were admitted in alternate order to the Los Angeles County General Hospital for their first acute myocardial infarction. They were placed on choline treatment after they were discharged and were followed in the Research Clinic of the Hospital. Fifty-two patients were given choline for one year, 35 for two years and 28 for three years. The dose of choline bicarbonate varied from 6 to 32 Gm. daily. The diet remained the same as that taken by the patients prior to their infarction. Of the 115 control patients 35 (30 per cent) had died after three years. Death in this series was due to recurrent coronary thrombosis with myocardial infarction in 19 cases, congestive heart failure in 10 cases and extracardiac causes in 6 cases. In the choline-treated series of 115 patients, 14 (12 per cent) had died after three years. Death in this series was due to recurrent coronary thrombosis with myocardial infarction in 6 cases, congestive heart failure in 5 cases and extracardiac causes in 3 cases. The lipotropic agent, choline, appears to reduce significantly the mortality rate from recurrent coronary thrombosis.

Hypertension Due to Sodium Chloride in Rats.—Sapirstein and his associates report three experiments on three groups of rats: adult males, young females and adult females. The animals were divided into control and experimental groups. Blood pressures were determined with the Sobin tail plethysmograph. The experimental animals received sodium chloride solutions from graduated drinking bottles as their sole source of fluid, while control animals received tap water. In experiment 1 sodium chloride concentrations of 1.5 to 2.5 per cent were given; in experiment 3, 2.0 per cent sodium chloride solutions were used throughout; in experiment 2, which was conducted in the hottest part of the summer, the animals received 2.0 per cent sodium chloride through most of the experimental period, but refusal of the saline solutions and precipitous weight losses on exceedingly hot days necessitated the substitution of tap water for twenty-four hour periods on several occasions. Blood pressures, body weights and fluid intakes were followed for six weeks after the institution of the hypertonic sodium chloride regimen. At the end of this period the animals were killed and the weights of hearts and kidneys determined. In the animals given hypertonic saline solutions arterial hypertension developed after a latent period of one to four weeks. At autopsy this was found to be associated with hypertrophy of the heart and kidneys.

Public Health Reports, Washington, D. C.

65:99-130 (Jan. 27) 1950

Statistics on Clinical Services to New Patients in Medical Groups. A. Ciocco, G. H. Hunt and I. Altman.—p. 99.
Polyvalent Salmonella "H" Agglutination as Rapid Screening Test for Salmonella Organisms. A. A. Hajna and S. R. Damon.—p. 116.

65:131-162 (Feb. 3) 1950

Action of Streptomycin and Usnic Acid on Development of Tuberculosis in Guinea Pigs. A. Marshak and M. Kuschner.—p. 131.
Tuberculosis Facilities and Planning Under Hospital Survey and Construction Act. L. S. Reed and E. T. Blomquist.—p. 146.

65:163-194 (Feb. 10) 1950

Estimates of Disabling Illness Prevalence in United States: Based on February 1949 Current Population Survey. T. D. Woolsey.—p. 163.

Southern Medical Journal, Birmingham, Ala.

43:85-180 (Feb.) 1950

*Chloramphenicol in Bacillary Infections of Urinary Tract. F. K. Garvey, W. A. Cline and M. Meads.—p. 85.
Office Examination in General Practice. J. R. Bender.—p. 91.
Clinical Aspects of Concomitant Strabismus. K. B. Benkwith.—p. 97.
Acute Abdomen. P. Thorek.—p. 101.
Modern Trends in Treatment of Pelvic Endometriosis: Based on Analysis of 583 Proved Cases. C. Tyrone and J. C. Weed.—p. 107.
Relation of Endometrial Hyperplasia to Menstrual Disorders with Remarks on Treatment. L. E. Burch and J. C. Burch.—p. 112.
Hazards Associated with Chemical Manufacturing. J. E. Williams.—p. 116.
Present and Potential Occupational Cancer Hazards and Carcinogenic Operations in Modern Industry. W. C. Huper.—p. 118.
Virus as Cause of Human and Animal Malignancies. J. E. Gregory.—p. 124.
Geriatric Dermatology. C. B. Kennedy, V. M. Henington, R. Ross Jr. and R. M. Hartwell.—p. 128.
Localized Intrarenal Cystic Disease of Kidney. C. Riser, C. A. Fort and J. D. Moffett Jr.—p. 133.
Fractures of Patella: Operative Treatment. J. N. Garber.—p. 138.
Intramedullary Nailing of Fractures of Femur and Other Long Bones. C. T. Berry.—p. 145.
Prostatism. L. G. Lewis.—p. 151.
Hematology in General Practice. R. R. Kracke.—p. 155.
Effects of Acetaldehyde on Perfused Lungs and Coronary Vessels. V.-J. Derbes and F. N. Martin Jr.—p. 162.
Common Form of Fat Dyscrasia: Dry Skin. F. M. Pottenger Jr.—p. 165.
Simultaneous Full Term Intra-Uterine and Extra-Uterine Pregnancy. W. B. Wiener and W. N. Carpenter.—p. 168.

Chloramphenicol in Bacillary Infections of Urinary Tract.—Garvey and his co-workers treated 21 patients (16 female and 5 male) with bacillary urinary tract infections with chloramphenicol. Three patients were given a second course of chloramphenicol after a clinical and bacteriologic relapse had

occurred. Nineteen of the subjects had chronic urinary tract infection with an average duration of 22 months; two others had acute infections of four and seven days. Involvement of one or both kidneys was demonstrated in 18 patients; the majority of these cases were complicated by calculi and/or hydronephrosis. Sixteen subjects had failed to respond to treatment with sulfadiazine, penicillin and streptomycin; previous therapy with aureomycin had been unsuccessful in 2 patients. An initial dose of 2 Gm. was given in two and later in four equally divided portions to all patients. A maintenance dose of 0.5 Gm. was given at four hour intervals five times daily to patients with infections involving the upper part of the urinary tract; 0.25 Gm. five times daily was used in 3 patients with lower urinary tract disease only. The duration of the treatment was limited arbitrarily to seven days. Because of frequent relapse of infection with such a regimen, the length of therapy was later extended to ten or more days. Total doses varied between 10 and 66 Gm. Chloramphenicol proved ineffective in 13 of the 24 cases. Failures were noted where relatively insusceptible organisms were initially present or where they were introduced (5 cases) or developed (4 cases) during treatment. On the whole, toxic symptoms were minor. The authors conclude that chloramphenicol is an effective chemotherapeutic agent for certain gram-negative bacillary infections of the urinary tract. Organisms of the colon-aerogenes group are particularly susceptible to the action of this drug.

Southern Surgeon, Atlanta, Ga.

16:1-96 (Jan.) 1950

Clinical Evaluation of Vagotomy in Treatment of Peptic Ulcer. M. Nordland, C. Marshall and M. A. Nordland.—p. 2.
Multiple Primary Malignant Tumors. H. C. Frech and R. B. Gottschalk. —p. 13.
Carcinoma of Colon. F. S. Johns.—p. 17.
Significance of Nipple Discharge. B. T. Beasley.—p. 23.

Surgery, Gynecology and Obstetrics, Chicago

90:129-208 (Feb.) 1950

Fracture of Ribs—Logical Treatment. F. P. Coleman and C. L. Coleman.—p. 129.
Carcinoma of Cervix: Statistical Evaluation of 1,938 Cases and Results of Treatment. J. M. Morris and J. V. Meigs.—p. 135.
*Parenteral Nutrition with Human Serum Albumin as Source of Protein in Early Postoperative Period. A. G. Fletcher Jr., N. S. Gimbel and C. Riegel.—p. 151.
Chloride Output Rate of Human Stomach in Healthy Subjects and Ulcer Patients; Effects of Vagotomy and Acetylcholine: Studies by Dye Dilution Technique. J. R. Brooks, J. M. Erskine, T. Gephart and others.—p. 155.
Lecithinase and Hyaluronidase in Experimental Intestinal Obstruction. C. A. Tanturi, R. E. Anderson and J. F. Canepa.—p. 171.
Surgical Treatment of Constrictive Valvular Disease of Heart. H. G. Smithy, J. A. Boone and J. M. Stallworth.—p. 175.
Studies of Development and Nature of Hypertension in Experimental Coarctation of Aorta. W. C. Sealy, W. DeMaria and J. Harris. —p. 193.
Study of Face Presentation in Normal Mature Fetus. B. E. Tucker, M. Solomkin and B. Abrams.—p. 199.
Experimental Use of Homologous Vein Grafts to Circumvent Pulmonic Valves. T. J. Donovan.—p. 204.
Gas Cysts of Intestines: Report of 2 Cases. W. A. Dale and H. E. Pearse.—p. 215.
*Investigation of "False Positive" Vaginal Smears. R. M. Graham and J. McGraw.—p. 221.
Postoperative Anal Stenosis. R. Turell.—p. 231.
Esophageal Arteries: Anatomic Study of 150 Specimens. L. L. Swigart, R. G. Siekert, W. C. Hambley and B. J. Anson.—p. 234.

Parenteral Nutrition with Human Serum Albumin.—The opportunity to evaluate the effects of relatively large amounts of intravenously administered human serum albumin on nitrogen metabolism was provided Fletcher and his associates by the distribution through the American Red Cross of supplies which became available for research studies at the end of the war. Albumin was assayed in 11 patients who were given serum albumin intravenously as the sole source of nitrogen during the immediate postoperative period. The albumin was provided in 100 cc. ampules containing 25 Gm. albumin and 1.0 Gm. of *dl*-acetyltryptophane. It was mixed with dextrose immediately before administration to give 0.2 Gm. nitrogen and 25 calories per kilogram of body weight daily, in a volume of 3,000 cc. Salt content was adjusted to the individual need. Patients who had undergone major abdominal operations were started on this regimen the day following operation and continued for five days. Water by mouth and unsweetened tea were permitted when the surgical condition allowed. The data presented show that 8 of the 11 patients were in positive nitrogen balance and 3 were in equilibrium. This was achieved with a considerably lower nitrogen and caloric intake than had previously been necessary when whole or hydrolyzed protein was given orally or intravenously to similar groups of patients during a similar time period.

"False Positive" Vaginal Smears.—Graham and McGraw investigated the "false positive" vaginal smears encountered in the laboratory since 1943. Of the 8 uteri available for study, observations in 4 had been consistent with squamous carcinoma and in 3 with adenocarcinoma; and in 1 case undifferentiated malignant cells were present. The positive smears were not confirmed by pelvic examination, cervical biopsy or curretage, and none of the uteri showed any recognizable malignant tumor when they were opened after surgical removal. Four of the uteri eventually proved to harbor a squamous carcinoma in situ of the cervix. Smears from these patients had been reported positive and "consistent with squamous carcinoma." Four of the uteri failed to reveal any lesion which could be diagnosed as carcinoma. Smears from 3 of these patients had been considered positive and "consistent with adenocarcinoma." The cells in the smears of 1 patient were not sufficiently well differentiated to suggest the type of epithelium from which they were derived. Slides of the 70 "false positive" smears were reviewed. In 62 of these, the positive report had been rendered because of the presence of cells previously thought to be carcinoma but now recognized as histiocytes, basal cells or endocervical cells. In the 8 other cases, the smears still meet the criteria for the diagnosis of malignant growth as used in the authors' laboratory. Of the 8 smears which are still thought to be positive even though unconfirmed, 5 are considered consistent with fairly well differentiated adenocarcinoma. It appears that the smear diagnosis of adenocarcinoma has certain limitations. The incidence of error in smears which are reported positive and consistent with squamous carcinoma is extremely low. False positive reports have been the target of criticism, most of which has little justification. A high incidence of false positive reports is a condemnation of the technic and laboratory which reads the smears. It is not an indictment of the method itself. The method is not foolproof. Inflammation and hyperplasia may result in atypicality of cells which is difficult or impossible to differentiate from neoplasia, and this is particularly true of cells sloughed from the endometrium.

Western J. Surg., Obst. & Gynecology, Portland, Ore.

58:1-40 (Jan.) 1950

Role of Active Exercise in Pelvic Muscle Physiology. E. G. Jones. —p. 1.
*Treatment of Postlumbar Puncture Headache with DHE-45 (Dihydroergotamine). W. G. Caldwell.—p. 11.
Consideration of Midpelvis Among Factors Which May Influence the Course and Outcome of Labor. S. A. Kaufman.—p. 14.
Effects of Long Continued Administration of Thyroid. B. Vidgoff and J. Stampher.—p. 20.
Posterior Pituitary Allergy. E. W. Winter and E. Edelson.—p. 24.
Myoma of Uterus Associated with Ascites and Hydrothorax. P. Martinez-Esteve and J. Ruiz Orrico.—p. 28.
Observations on Childbirth. R. N. Rutherford.—p. 32.

Treatment of Postlumbar Puncture Headache.—Caldwell's study is limited to obstetric patients delivered vaginally under low spinal anesthesia. Headache is the chief untoward reaction following spinal and saddle block anesthesia. Rest in bed in the horizontal position is the best therapy, but in some cases considerable time must elapse before the headache disappears. Caldwell used dihydroergotamine methanesulfonate (DHE 45) in the treatment of postlumbar puncture headache. He studied it in preference to ergotamine tartrate, because there is evidence that it has the same degree of effectiveness as ergotamine tartrate but is considerably less toxic. Of 42 patients treated, 32 obtained complete relief; no relief was obtained in 7, and minimal relief in 3. The drug was administered in three ways: (1) intramuscularly, (2) intravenously or (3) intravenously with the simultaneous intramuscular injection of one ampul (7½ grains, 0.5 Gm.) of caffeine and sodium benzoate. The third method proved to be the most efficacious. The only side effects experienced were transient vertigo, light headedness and slight nausea. None of these side effects proved troublesome, and all subsided within thirty to forty minutes.

FOREIGN

An asterisk (*) before a title indicates that the article is abstracted. Single case reports and trials of new drugs are usually omitted.

British Journal of Cancer, London

3:433-574 (Dec.) 1949. **Partial Index**

Statistical Report on 955 Cases of Cancer of Cervix Uteri and 321 Cases of Cancer of Corpus Uteri. W. L. Harnett.—p. 433.
Status of Genetical Studies in Human Cancer. J. Clemmesen.—p. 474.
Meningeal Tumours with Extracerebral Metastases. E. Christensen, W. Klaer and S. Winblad.—p. 485.
Chemically Induced Breast Tumours and Mammary Tumour Agent. L. Dmochowski and J. W. Orr.—p. 520.
Development of Malignancy in Experimentally-Induced Adenomata of Thyroid. W. H. Hall and F. Bielschowsky.—p. 534.
Role of Thyroxine Deficiency in Formation of Experimental Tumours of Thyroid. F. Bielschowsky.—p. 547.
Effects of Repeated X-Radiation of Whole Body on Development of Tumours in Rats Due to Feeding p-Dimethylaminoazobenzene. C. Hoch-Ligeti.—p. 562.

British Journal of Plastic Surgery, Edinburgh

2:219-294 (Jan.) 1950

Treatment of Recent Burns of Hand. W. P. D. Ross.—p. 233.
Treatment of Congenital Absence and Obliterative Conditions of Vagina. A. McIndoe.—p. 254.
"Gelatinised" Bond for Repair of Skeletal Losses. J. E. Sheehan and W. A. Swanker.—p. 268.
Pascal's Law as Applied to Skin Grafting. H. P. Pickerill.—p. 274.
Uses of Stomach Tube in Plastic Surgery. H. J. Richards.—p. 278.
*Reciprocal Skin Homografts in Medico-Legal Case of Familial Identification of Exchanged Identical Twins. A. McIndoe and A. Franceschetti.—p. 283.

Reciprocal Skin Homografts for Identification of Exchanged Identical Twins.—McIndoe and Franceschetti state that Bauer in 1927 was first to furnish an experimental test for identical twinning by means of skin homografts. They report a case in which they made use of reciprocal skin homografts for the identification of exchange identical twins. The parents of twins 6 years of age became aware of the existence of another small boy who bore a striking resemblance to one of their own children. Believing first that it was simple coincidence, they were surprised to learn that the other child was born the same night and in the same clinic as their own. The cross grafts in the real twin brothers showed, in addition to normal skin pattern and texture, persistence of the same direction of hair growth as had been characteristic in their original situations. There was complete survival of all elements of the transplanted skin. On the other hand the grafts between the two supposed twins failed completely and left nothing but an atrophic cicatrix in each case. The similarity in the various morphologic and psychic normal characteristics, the correspondence in certain anomalies and, finally, the experimental evidence of the reciprocal skin homografts left no doubt that the supposed substitution of the twins had actually occurred.

British Journal of Tuberculosis, London

43:93-118 (Oct.) 1949

Therapeutic Rationale in Tuberculous Broncho-Stenosis. A. Hurst, H. Laff and G. Oguro.—p. 93.
Some Considerations in Postoperative Course of Patients Submitted to Thoracoplasty. S. J. MacHale.—p. 99.
Familial Aspects of Sarcoidosis. E. R. Bickerstaff.—p. 112.

British Medical Journal, London

1:203-262 (Jan. 28) 1950

*Production of Hypertension and Hyalinosis by Desoxycortisone. H. Selye.—p. 203.
Progress of Gastric Surgery in Last Half-Century. J. Walton.—p. 206.
Acute Perforated Peptic Ulcer: Study of Recent Fall in Mortality. F. A. Jones, P. J. Parsons and B. White.—p. 211.
Perforated Carcinoma of Stomach Simulating Perforated Gastric Ulcer. R. Doll.—p. 215.
Psoriasis. H. W. Barber.—p. 219.
Sciatic Paralysis in Newborn Infants. F. P. Hudson, A. McCandless and A. G. O'Malley.—p. 223.
Anaphylactoid Purpura in Pulmonary Tuberculosis. P. G. Dalgleish and B. M. Ansell.—p. 225.

Production of Hypertension and Hyalinosis by Desoxycortisone.—Selye observed that overdosage with desoxycorticosterone in animals reproduced the experimental equivalent of certain hypertensive, rheumatic and allergic diseases of man—in particular, malignant nephrosclerosis, necrotizing arteritis similar to periarteritis nodosa, cardiac nodules resembling Aschoff bodies, joint lesions comparable to rheumatic or rheumatoid arthritis, as well as an intense and persistent rise in arterial blood pressure. These changes developed readily after sensitization of animals to these toxic actions of overdosage with desoxycorticosterone by means of unilateral nephrectomy or a high sodium intake. Essentially the same changes occurred in sensitized animals exposed to noxious agents capable of producing a general-adaptation syndrome with the characteristic stimulation of the adrenal cortex. Since in man these diseases are often preceded by exposure to cold, infections, poisoning or other damaging agents, it was assumed that the aforementioned diseases are at least partly caused by an abnormal adaptive response of the adrenal cortex and represent diseases of adaptation. Since it was not definitely proved that desoxycorticosterone is produced by the adrenals, Selye believed that it would be important for the interpretation of the "diseases of adaptation" to demonstrate that a natural mineral-corticoid agent can also produce them. This has now become possible. The mineral-corticoid with which this investigation is concerned is Reichstein's compound S, or 11-desoxycortisone. It bears nearly the same relationship to cortisone as desoxycorticosterone to corticosterone. The author was especially interested in determining whether desoxycortisone would produce the diseases of adaptation of the hyalinoid type, because it is so closely related to cortisone, which inhibits the progress of these same diseases. Studies were made on immature male piebald rats. Desoxycortisone (Reichstein's compound S), a steroid normally occurring in the adrenal cortex, proved to be highly active in raising the blood pressure and water turnover. It also caused periarteritis nodosa, acute nephrosclerosis and granulomatous nodules in the heart, accompanied with organic changes similar to those which occur in certain so-called collagen diseases of man. The data are interpreted as further evidence that naturally occurring corticoids may be involved in the pathogenesis of those "diseases of adaptation" which respond favorably to therapy with glucocorticoids or pituitary adrenocorticotropic hormone (ACTH).

1:263-318 (Feb. 4) 1950

Deaths from Influenza—Statistical and Laboratory Investigation. C. H. Stuart-Harris, Z. Franks and D. Tyrrell.—p. 263.
Recent Changes in Death Rate from Influenza. W. J. Martin.—p. 267.
Influenza: Study of Two Outbreaks. C. M. Ogilvie, R. H. M. Mavor and C. Weymes.—p. 269.
Aureomycin in Treatment of Peritonitis. C. A. Bailey and C. V. Jumeaux.—p. 271.
*Epithelioma and Papilloma Arising on Recently Irradiated Skin: Report of 3 Cases. J. Walter.—p. 273.
Case of Acute Porphyria. Q. H. Gibson, D. C. Harrison and D. A. D. Montgomery.—p. 275.
Acute Idiopathic Porphyria Presenting as Progressive Paresis of Landry Type. F. D. Hart and P. Collard.—p. 278.
Convulsions in Childhood. G. D. Read.—p. 279.
Endothelioma of Pleura: Report of Case. P. H. Buxton and A. Willcox.—p. 281.
Fracture of First Rib: Its Occurrence and Clinical Diagnosis. F. I. Powell.—p. 282.

Epithelioma and Papilloma Arising from Recently Irradiated Skin.—Walter points out that hyperkeratosis and epitheliomatous degeneration are well recognized as late complications of chronic radiodermatitis following treatment. These develop on a basis of skin damage much as atrophy, telangiectasia and epidermal thickening, though they may at times be caused by repeated irradiation over several years without obvious skin reaction. The latent interval is usually several or many years. The author reports 2 instances of squamous epithelioma and 1 of papilloma which had appeared on the skin at intervals of seven, eleven and nineteen weeks after completion of radical roentgen therapy with moderately severe skin reactions. The possibility that the lesion could be cutaneous metastases is contraindicated by the fact that the clinical appearances were typical of primary skin tumors. If an early microscopic skin tumor was present before the start of radiotherapy the dosage given to the skin in each case would be expected either to be curative of such tumor or at least to delay its appearance considerably. The tumors show no changes suggestive of late radiation effects. With regard to the possibility of early radiation effects the author says that a possible explanation might be based on the action of roentgen rays on the

chromosomes. Mutations can be produced experimentally by radiations, and such a mutation in one or more cells due to radiation treatment might be the starting point of a new growth. That the irradiation may have acted as an acute carcinogen is possible but not likely, because latent periods of seven to nineteen weeks are extremely short for human carcinogenesis. Another possibility is the presence of an associated carcinogenic irritant such as a local application to the skin. The only local application used in the reported cases was penicillin cream for periods up to two weeks.

Glasgow Medical Journal

31:1-46 (Jan.) 1950

*Management of Persistent Posterior Position of Occiput. T. N. Macgregor.—p. 1.
Boeck's Sarcoidosis: Report of Case with Lesions Detected in Material Obtained by Sternal Puncture. A. C. Kennedy.—p. 10.

Management of Persistent Posterior Position of Occiput.—The data presented by Macgregor were obtained from the records of the Edinburgh Royal Maternity Hospital and the Royal Infirmary, Edinburgh, during a twenty year period. There were 44,649 vertex deliveries, and of these 3,066 were diagnosed at the beginning of or during labor as posterior positions of the occiput or were delivered as such. The author arrives at the following conclusions with regard to the management of the persistent occipitoposterior position. Each case should be assessed after labor has been in progress for thirty hours and a decision made forthwith as to the method of delivery. When the head is lightly fixed or free above the pelvic brim and the cervix is found to be firm and dilated only 1 to 2 fingerbreadths, delivery by lower segment cesarean section without delay is probably the method of choice. When the cervix is found to be well taken up and more than half dilated, full dilatation should be anticipated up to a period of five hours, and thereafter the head should be rotated and delivery effected by forceps. There is everything to gain from carrying out a manual rotation and forceps delivery at this time. Mother and child are usually in good condition; the rotation is not difficult, and the danger of having to apply high cavity forceps can be overcome by insuring, through fundal or suprapubic pressure, that the rotated head descends well down into the pelvis. The author recommends the prophylactic intravenous use of dextrose and saline solution and chemotherapy in addition to adequate sedation during prolonged labor. When the head is on the pelvic floor labor should be terminated either by forceps delivery face to pubes, after an adequate episiotomy, or by manual rotation and forceps delivery.

Journal Obst. & Gynaec. of Brit. Empire, Manchester

56:949-1146 (Dec.) 1949. **Partial Index**

Displacement of Bladder and Urethra During Labour. P. Malpas, T. N. A. Jeffcoate and U. M. Lister.—p. 949.
Anaesthetist's Contribution to Resuscitation of the Newborn. H. Roberts.—p. 961.
Total Hysterectomy and Carcinoma of Cervical Stump. G. C. Donnelly and W. A. G. Bauld.—p. 971.
Spontaneous Subperitoneal Haemorrhage Complicating Pregnancy. H. Roberts.—p. 976.
Cervical Dystocia. H. R. Arthur.—p. 983.
Urinary Excretion of Amino-Acids in Normal and Abnormal Pregnancies. J. A. McC. Smith.—p. 994.
Origin of Amniotic Fluid and Bearing on This Problem of Foetal Urethral Atresia. R. E. Shaw and H. J. Marriott.—p. 1004.
Dissecting Aneurysms and "Rupture" of Aorta in Association with Pregnancy. J. W. Joule.—p. 1010.
Pregnancy Test with Male Toad (Bufo Viridis). F. G. Sulman and E. Sulman.—p. 1014.
Rupture of Transverse Uterine Scar After Lower Segment Caesarean Section. R. F. Lawrence.—p. 1024.
Oxygen Therapy for Newborn. T. J. C. MacDonald.—p. 1028.
Acute Salpingitis During Pregnancy. G. G. Lennon.—p. 1035.
Cavernous Haemangioma of Perineum. N. Alders.—p. 1038.
*Pregnancy Following Pelvic Irradiation. A. M. Giles.—p. 1041.
Treatment of Postabortal Peritonitis by Surgery. M. Schneider.—p. 1046.
Placental Extracts. J. A. Loraine.—p. 1051.

Pregnancy Following Pelvic Irradiation.—Giles reports 2 cases in which attempted sterilization by radium therapy was unsuccessful and in which subsequent pregnancy took place. Both women were 32 years of age at the time of irradiation. The first woman expelled a macerated fetus. The second woman expelled a macerated fetus after forty-four weeks of amenorrhea. Menstruation was regular thereafter, and during the following year she conceived again. She went into labor at the thirty-sixth week. The labor was prolonged (seventy-one hours) because of rigidity of the cervix and resulted in the delivery of a stillborn child. The author stresses that intrauterine substerilizing doses of radium irradiation are unjustifiable unless steps are taken to prevent the possibility of subsequent pregnancy. Induction of the menopause by this form of radiotherapy in women below the age of 40 years should be performed only in exceptional circumstances. The amount of irradiation required to effect permanent sterilization varies with age, being less near the menopause and greater in younger women. But even with a relatively high dosage the effect on women under the age of 40 years is uncertain. After a varying period of amenorrhea, menstruation and ovulation may recur. The author cites Murphy, who recorded a low abortion rate, a low stillbirth rate and a low deformity rate. Others, however, have challenged Murphy's statements as unproved. Muller believed that irradiation would produce mutation of genes in the chromosomes of human germ cells, as had been proved in animals. He pointed out that these chromosomes are passed down from generation to generation and that further irradiation in subsequent generations would produce further damage. Physical deformity and change of character could appear in future generations.

Acta Oto-Laryngologica, Stockholm

37:483-568 (Dec.) 1949. **Partial Index**

Otogenic Non-Purulent Encephalitis. G. V. Th. Borries.—p. 483.
Chronic Cholesteatomatous and Chronic Cholesterinic Otitis. B. Simonetta.—p. 509.
Case of Generalized Lipoidosis of Temporal Bone, Type Hand-Schüller-Christian's Disease. J. Isingrud.—p. 516.
*Streptomycin in Treatment of Tuberculous Otitis Media. U. Siirala and E. A. Lahikainen.—p. 528.
Concurrence of Glaucoma and Ménière's Disease. E. Godtfredsen.—p. 533.

Streptomycin in Tuberculous Otitis Media.—Siirala and Lahikainen report on 5 patients with tuberculous otitis media treated with streptomycin. All but 1 of the patients were children. The tuberculous nature of the lesion was verified in all cases by microscopic or bacteriologic studies. Mastoidectomy was done in 3 children; in the fourth child a mastoid fistula was curetted. The adult required a radical mastoid operation. In all patients the operation revealed typical tuberculous bone destruction and granulations and even caseation. A suppurating fistula developed in the scar in 2 patients and did not close until the patients were treated with streptomycin. This also applies to the fistula which appeared spontaneously in 1 case. The daily dose of streptomycin was 0.5 Gm., except for the adult patient who was given 1 or 2 Gm. daily during the first few days. The total dose for the children varied from 5.0 to 9.5 Gm. The adult patient received much more. Treatment resulted in a dry ear and cicatrization of the wound in the 3 patients subjected to mastoidectomy. The ear subjected to radical operation healed normally. In 2 cases there are reliable data regarding the hearing before and after treatment. Hearing remained unchanged in both. The patients have been followed for a short time only, but it seems unlikely that the tuberculous process will recur.

Archiv für Dermatologie und Syphilis, Heidelberg

188:423-650 (Nov. 30) 1949. **Partial Index**

Epidermodysplasia Verruciformis of Lewandowsky-Lutz. St. Teodoresco, M. Fellner and A. Conu.—p. 423.
Chemistry and Biology of Surface Fat of Skin. H. Lincke.—p. 453.
Telangiectasia Universalis. R. Wernsdörfer.—p. 510.
Aspects of Twisted Hairs (Pili Torti). H.-W. Groeger.—p. 521.
Virus Diseases in Dermatology. K. Herzberg.—p. 526.
*Jaundice After Treatment with Arsphenamine. W. Gennerich.—p. 567.
*Nonspecific Positive Wassermann Reaction at Time of Menstruation and During Premenstrual Period. G. Wildführ.—p. 576.

Jaundice After Treatment with Arsphenamine.—Gennerich says that there was no instance of jaundice following arsphenamine injection in 2,500 patients from 1910 to 1915 in a navy hospital in Kiel. Even the injection of large doses never resulted in icterus. Instances of arsphenamine jaundice were observed first during the spring of 1916, the incidence and the severity of the cases gradually increased from then to the end of the first world war. He believes that poor nutrition

was largely responsible. In a few cases an infectious origin could not be excluded, but, since a meticulous asepsis was observed in the arsphenamine injections, this cause cannot have assumed general importance. Cases of arsphenamine jaundice disappeared with the return of a better nutrition. Arsphenamine jaundice recurred in navy personnel and in civilians during the second world war, but while nutrition was good its incidence was low, corresponding in frequency to that of infectious arsphenamine jaundice during the first world war. Epidemic hepatitis of virus origin was probably the chief cause. Syphilis seems to play no essential role in the patients with jaundice who have received arsphenamine.

Nonspecific Positive Wassermann Reaction During Menstruation.—Wildführ points out that nonspecific or false positive syphilitic reactions occur in many acute febrile diseases, such as mononucleosis, typhus, malaria, Plaut Vincent's angina, relapsing fever, trypanosomiasis, typhoid, scarlet fever, leprosy and tuberculosis, and in the presence of certain tumors and following anesthesia, which is known to interfere with the lipid metabolism. Pregnancy and menstruation may also result in false positive Wassermann reactions. He cites 12 women between the ages of 17 and 31 who had positive Wassermann reactions during their menstrual periods, although they had never been exposed to syphilis and came from families free from syphilis. In some of these women the Kahn reaction was also positive, but usually the Kahn test and the Meinicke clarification II test elicited negative reactions. Since the majority of these women had a family history of allergy or were themselves allergic, it is assumed that the false positive Wassermann reaction was related to the allergic predisposition.

Presse Médicale, Paris

57:1187-1248 (Dec. 25) 1949. **Partial Index**

Role of Partial Pneumothorax in Intrathoracic Suppurations. C. Mattéi, M. Tristani, A. Barbe and J. Choux.—p. 1187.
*Role of Angiocardiography in Study of Thoracic Tumors. A. G. Weiss, C. Schmidt, J. Witz and others.—p. 1189.
*Revascularization of Extremity by Terminoterminal Arteriovenous Anastomosis. L. Leger.—p. 1198.
*Indications for Carotid, Cerebral Arteriography. R. Rogé.—p. 1233.

Angiocardiography in Study of Thoracic Tumors.—Weiss and co-workers performed angiocardiography on 6 patients with thoracic tumors. The contrast medium was introduced into the external right jugular vein in an amount not exceeding 60 cc. Untoward reactions can be prevented by injection of 5 cc. of a 1 per cent solution of procaine hydrochloride and of 20 cc. of isotonic sodium chloride solution before the injection of the contrast medium. Six roentgenograms were taken within four seconds. They revealed alterations in the pulmonary artery and its branches with distortions, various degrees of compression and obstructions in 2 patients with malignant tumors. Abnormal opacification due to atypical vascularization made it possible to detect an extension of the neoplastic process to the hilus and the mediastinum. Localization of a mediastinal tumor in 2 patients was facilitated by angiocardiography, which revealed displacement or compression of vascular trunks. An aortic aneurysm could be definitely excluded in 1 of these patients. Angiocardiography may aid in the evaluation of pulmonary function.

Revascularization of Extremity by End to End Arteriovenous Anastomosis.—Leger performed an end to end arteriovenous anastomosis at Scarpa's triangle in 2 patients, aged 56 and 44, with disturbances of the peripheral arterial circulation. Anastomosis of the superficial femoral artery with the femoral vein, with a Blakemore vitallium tube, was done in the older patient, while silk sutures were employed for the anastomosis of the proximal end of the superficial femoral artery with the peripheral end of the deep femoral vein in the younger patient. Temporary subjective and objective improvement resulted in the older patient, but the anastomosis did not remain patent in spite of the administration of heparin the first three postoperative days. Gangrene of the foot required amputation of the leg eleven months after the anastomosis was performed. Intravenous adminstration of heparin was carried out for eight days after the intervention and was then continued subcutaneously twice a week in the younger patient. Follow-up for three months showed that the patient was benefited by the reversal of the circulation. A thrill was heard at Scarpa's triangle, associated with a systolic murmur and terminated by a mild rattle. The patency of the anastomosis was proved by the persistence of both the thrill and the murmur. The integrity of the anastomosis was demonstrated on arteriography. The caliber of the collaterals of the deep femoral artery was definitely superior to that observed before the intervention. Filling of the popliteal vein showed that the effect of the "countercurrent circulation" made itself felt at a distance from the anastomosis. It did not produce any changes in the cardiac dynamics.

Indications for Carotid Cerebral Arteriography.—According to Rogé, diagnosis of cerebral aneurysms and angiomas can be established only by cerebral angiography. The method is safe and should be practiced whenever aneurysms or angiomas are suspected. It is a guide for the neurosurgeon and an aid in deciding whether surgical intervention should or should not be performed. Arteriography of cerebral tumors should be limited to the cases in which the symptoms suggest vascular tumor (meningioma) and to temporal tumors in which ventriculography is not feasible or its interpretation is difficult because of displacement of the ventricular system. Arteriography is less indicated than ventriculography in cranial trauma. Arteriography should be used in cerebral vascular syndromes more frequently than in the past. It may be helpful in the difficult differential diagnosis of hemorrhage from thrombotic softening. Arteriography will facilitate the decision whether or not surgical intervention should be performed in cases of hemorrhage. Arteriography makes possible treatment with vasodilators in partial or complete thrombosis of the cerebral artery occurring at its termination or, more frequently, at the carotid bifurcation. Improvement resulted frequently from a single injection of an iodized contrast medium into the internal carotid artery in cases of thrombosis. This observation suggests possibilities in prevention or early treatment of cerebral softening by injection of more active pharmacodynamic substances, such as nicotinic acid into the carotid artery. Definite improvement of the aphasia, particularly with respect to alexia, was observed within two days after the injection, while pronounced increase of the diameter of the vessel was demonstrated on arteriography ten minutes after the injection. Arteriography may be suggested for diagnosis of a thrombosis in the stage of development in syndromes of "cerebral vascular intermittent claudication," while the injection of vasodilators into the internal carotid artery may be combined with general medicai treatment.

Revista Brasileira de Medicina, Rio de Janeiro

6:795-809 (Dec.) 1949. **Partial Index**

*Lobectomy and Pneumonectomy in Chronic Abscess of Lung. F. Paulino. —p. 795.

Lobectomy and Pneumonectomy in Chronic Abscess of Lung.—According to Paulino acute suppuration of the lung secondary to bronchiectasis, tumor or congenital malformation of the lung does not resolve spontaneously. Medical treatment and surgical drainage are of no avail. The disease follows a chronic course of long duration with frequent recurrences and bouts of chronic pneumonitis and pyosclerosis. The condition requires lobectomy or pneumonectomy. Of 3 adult patients with chronic abscess of the lung, 2 recovered after lobectomy and 1 after pneumonectomy. The pulmonary symptoms were permanently controlled in all 3 cases.

Revista Clínica Española, Madrid

36:1-62 (Jan. 15) 1950. **Partial Index**

*Experimental Nephritis from Nephrotoxic Serum (Masugi's Nephritis). E. Roda, C. Jiménez Díaz and J. M. Linazasoro.—p. 9.
*Meningiomas of Pontocerebellar Region with Symptoms of Multiple Sclerosis. I. de Gispert.—p. 29.

Masugi's Nephritis.—Roda and collaborators experimented with rats and rabbits with nephritis induced by injection of a specific nephrotoxic serum. A mild course was observed, with apparent recovery in one or two weeks. Renal insufficiency did not develop in any of the animals. The renal lesions of the sacrificed animals showed a long, severe, progressive process. The pathologic changes were diffuse in the kidneys of animals

which were given two injections. The renal lesions here exhibited two stages of progression, as if they had developed in two bouts of the disease. The main renal lesion consisted of an interstitial reaction of the glomerular mesenchyma with consequent glomerular sclerosis, changes in the permeability of the capillaries, involution of the glomeruli and degeneration and regeneration of the tubular epithelium. The quantity of protein in the nephritic kidney was twice that of the normal kidney. The authors believe that the increased quantity of proteins in the kidney shows a specific renal precipitation of the blood proteins by blood antibodies. Protein precipitation is the cause of the renal lesion and its progressive course. The experiments suggest a possible primary renal mesenchymal lesion as the cause of chronic nephritis in human beings.

Meningioma Simulating Multiple Sclerosis.—De Gispert states that the neurologic symptoms of tumors of the cerebellopontine angle are frequently similar to those of multiple sclerosis. In the 3 cases of meningioma of the cerebellopontine angle reported by the author, the patients did not show symptoms of intracranial hypertension. One of the patients had papillary stasis in an advanced stage, and another complained of headache during effort. The differential diagnosis of tumor of the cerebellopontine angle was made by the course of the disease, with accentuation of the unilateral cerebellar symptoms, the albuminocytologic dissociation of the cerebrospinal fluid, diminution of the left corneal reflex and, mainly, by the typical roentgen picture of the head taken in the Stenvers, the Towne-Twining and the Schüller's positions. The roentgenograms showed changes in the petrous bone and in the outline of the internal auditory canal, characteristic of meningioma of the cerebellopontine angle. The roentgen diagnosis was confirmed at operation. The microscopic examination revealed a typical meningioma in 2 patients and a pseudoepithelial lobular meningioma in the third.

Schweizerische medizinische Wochenschrift, Basel

80:25-48 (Jan. 14) 1950. **Partial Index**

Pachyderma Plicata with Hypertrophic Pachyperiostosis (Pachyperiostiodermia): Their Occurrence in Patients with Bronchopulmonary Carcinoma. M. R. Castex, E. S. Mazzei and F. Schaposnik.—p. 25.
Pathogenesis and Therapy of Vasomotor Headache with Dihydroergotamine (Ergot Derivative). P. Hofmann.—p. 28.
*Ambulatory Treatment of Phlebitis. K. Sigg.—p. 33.

Ambulatory Treatment of Phlebitis.—Sigg considers compression bandages and administration of anticoagulants as the best method of therapy and prophylaxis for phlebitis and deep thromboembolism. The compression bandage must be applied with the patient in bed. The bandage stimulates the venous circulation and prevents stasis in the lower extremities, particularly in the leg, where 90 per cent of all thromboemboli have their origin. Severe deep phlebitis may be prevented by this treatment when used prophylactically. Thirty-seven to 79 per cent of all patients with phlebitis will be affected at a later date by indolent ulcers of the leg, and the remaining patients will present other sequelae of phlebitis, such as edema of the leg, eczema, varices, varicophlebitis and spasms. Ninety-five per cent of all these patients may, therefore, be considered as partial invalids. The prophylactic effect of the compression bandage is particularly important because prophylactic treatment with anticoagulants cannot be practiced in the majority of the cases. Compression bandages may be applied after the occurrence of thromboembolism (phlegmasia alba dolens). Recovery time may be shortened considerably by combined treatment with anticoagulants and compression bandage.

Semana Médica, Buenos Aires

56:1079-1100 (Dec. 15) 1949. **Partial Index**

*Porphyria of Central Nervous System. D. Brage.—p. 1091.

Nervous Porphyria.—Brage says that the course of porphyria with involvement of the central nervous system may be similar to that of a neuroviral infection. The acute attack is due to a latent disorder of the metabolism of porphyria pigments of infectious origin, which becomes active under the effect of certain drugs; the disease is not necessarily hereditary. A 34 year old woman had acute hallucinations and ascending paralysis, of the type caused by a neuroviral infection, shortly after an arsphenamine injection. The cerebrospinal fluid was normal. Porphyrin was found in the blood plasma and in the urine. Blood transfusion and administration of leukotropin aggravated the symptoms and the neurologic signs and increased elimination of porphyrin. The pathologic alterations in the central nervous system were those of depositions of porphyrin in the subcortical zone, microgliar reaction and demyelinization. There was vacuolization in the anterior horn cells. Minimal amounts of porphyrin pigments were present in the visceras. The cultures of lisates of the visceras and of body secretions with successive passages gave negative results for a neurovirus infection. There was no history of porphyria in the family.

Wiener klinische Wochenschrift, Vienna

62:1-20 (Jan. 6) 1950. **Partial Index**

Clinical Aspects and Therapy of Lung Tumors. W. Denk.—p. 2.
*Implantation of Anterior Pituitary Lobe to Achieve Compound E (11-dehydro-17-hydroxycorticosterone) Effect on Rheumatic Conditions of Joints. K. Fellinger.—p. 9.
New Observations on Arteritis of Extremities.—A. Lemaire.—p. 11.

Anterior Pituitary Lobe Implantation for Rheumatic Conditions.—Fellinger treated 23 patients with primary and secondary chronic polyarthritis with 62 implantations of 139 anterior pituitary lobes. The anterior pituitary lobes taken from animals just slaughtered were immersed in liquid air, thus achieving an immediate stoppage of all cellular changes and complete preservation of the hormones. One or two anterior pituitary lobes were used for one deep subcutaneous implantation in the abdomen or thigh with local anesthesia. Temporary improvement consisted of less stiffness of joints, disappearance of pain and euphoria occurring within two to three hours after the implantation, lasting six to eight days. A rapid drop in eosinophils, normalization of the erythrocyte sedimentation rate, mildly increased excretion of urates in the urine and a mild increase of ketosteroids followed the clinical improvement within the next few days. The duration of the improvement was much shorter, frequently a few hours, in old patients with arthritis deformans. Repeated implantations produced the same improvement as the first implantation. Allergic reactions were not observed. Treatment failed in 4 patients, among them 1 young woman with severe primary chronic polyarthritis deformans, possibly of tuberculous origin. The therapeutic effect obtained with the implantation of anterior pituitary lobes was thus similar to that obtained wih cortisone, which, too, is effective only for the duration of its administration.

Zentralblatt für Chirurgie, Leipzig

74:225-336 (No. 3) 1949. **Partial Index**

*Severe Transthoracic Impalement Injury on Iron Pipe with Involvement of Mediastinum and Opening of Both Pleural Cavities: Recovery Without Complications. W. Schmitt.—p. 225.
Experience with Early After-Amputation Following Injuries of Extremities. G. Weber.—p. 239.
Xanthomatous Giant Cell Tumors with Infiltrating Growth in Tendon Sheath. W. Keusenhoff and V. Haenselt.—p. 244.
*Primary Carcinoma of Nails. J. Bayer.—p. 253.

Transthoracic Impalement Injury with Recovery.—Schmitt reports the case of a boy who fell and was impaled on a tube 19 mm. in diameter. The point of the tube entered the thorax at the eighth intercostal space on the right side in the anterior axillary line and emerged at the left side of the neck, behind the sternocleidomastoid muscle. The tube was anchored in the ground, and the physician who was called administered anesthesia and removed the boy from the tube. The boy had hemothorax and pneumothorax, but no major vessel or nerve had been injured. Exploratory laparotomy was performed to exclude abdominal injuries; the entrance and exit wounds resulting from the impalement were inspected and closed, and the boy recovered.

Carcinoma of Nails.—Bayer presents the histories of 2 patients, aged 71 and 72, in whom carcinoma developed in a previously apparently normal nail. First there was a blue spot; then superficial ulceration developed. Retardation of healing after removal of the nail led to biopsy, which disclosed the true nature of the lesion. Review of the literature revealed 19 similar cases. The possibility of carcinoma should be considered in cases of subungual lesions that show no tendency to heal even after the nail has been removed.

BOOK NOTICES

The reviews here published have been prepared by competent authorities and do not represent the opinions of any official bodies unless specifically stated.

Electrocardiography: Fundamentals and Clinical Application. By Louis Wolff, M.D., Visiting Physician, Consultant in Cardiology and Chief of the Electrocardiographic Laboratory, Beth Israel Hospital, Boston, Mass. Cloth. $4.50. Pp. 187, with 110 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1950.

Although innumerable books on electrocardiography are available, there nevertheless exists a need for a book for beginners which emphasizes the basic principles on which this subject rests rather than mere memorization of "patterns." It was with such a need in mind that the author undertook the writing of this small volume. The book is divided into two sections. The first deals with the basic principles of electrocardiography and the second with their clinical application. The straightforward lucid style employed in the first section of this book will enable the beginner to obtain a feeling of easy familiarity with material that usually is not readily assimilated. The author in this section has ignored no important fundamental concept and yet has avoided losing the reader in a maze of confusing detail. Unfortunately, this style is not retained in the second part of the book, where the author is compelled to deal with the subject matter in a more empiric manner.

There are numerous statements to which most workers in the field will take exception; most of them are of minor importance. They do not, however, detract from the usefulness and merit of the book.

The concept of an earlier arrival of the impulse at the surfaces of the right ventricle is retained, although this has been demonstrated conclusively to be incorrect. The term hypertrophy is used to describe patterns of heart strain. It would appear that the latter term is preferable; it has been shown that after sympathectomy for hypertension the electrocardiographic pattern of left side of the heart strain frequently disappears more rapidly than would seem possible if hypertrophy alone were the basis for this pattern. The erroneous term arborization block has been retained. The rather confusing statement is made at one point in the book that "bundle branch block and hypertrophy are not always the cause of QRS prolongation—it is sometimes due to depression of intraventricular conduction." The author attributes an organic or functional lesion in the bundle branches to each pattern of bundle branch system block. For this reason, he insists on the absence of Q waves from the left side of the heart in left bundle branch system block and attributes their presence in every instance to septal disease. Not many will agree with the statement that S-T and T changes are more reliable signs of infarction than QRS changes or that Q waves in right-sided chest leads in the presence of right bundle branch system block and infarct are due to epicardial negativity.

These misconceptions are not serious, certainly not for the beginner. It is obvious that the author has done a commendable job in writing a book designed for the novice in the field.

Die Bazillenruhr. Von Ludwig Roemheld, Dozent für innere Medizin. Paper. Price, 10.80 marks; $3.25. Pp. 125. Georg Thieme, Diemershaldenstrasse 47, Stuttgart-O; imported by Grune & Stratton, 381 4th Ave., New York 16, 1949.

This monograph on bacillary dysentery is based on the author's personal experience in World War II and is supplemented by several hundred references almost exclusively from the German literature. The paper was concluded in 1944 (only a few more recent references have been added) and deals with pathogenesis, clinical manifestations, bacteriology, epidemiology, immunization, pathology, differential diagnosis, treatment and prognosis, with emphasis on clinical aspects and treatment.

In the chapter on general pathogenesis, the author briefly discusses the pertinent geographic and climatic factors, individual constitutional and psychosomatic problems, hygienic conditions, water and food, sewage disposal and problems of mass infection as well as the theory of the action of dysentery toxins. The largest part of the book is occupied with the protean clinical signs of dysentery, illustrated by cases the validity of which is somewhat dubious because of the absence of etiologic diagnosis. The main enteric and parenteral signs are presented. Circulatory and hematologic problems connected with dysentery, questions of the salt, water and protein equilibrium, loss of weight, edema, dehydration, cachexia, disturbances of skin and central nervous system are discussed, as well as its course, severity, duration, relapses, chronicity, complications, mixed and secondary infections and late manifestations, as in Reiter's syndrome. The death rate is given as 0.4 per cent in 1941 and 2.3 per cent in 1942.

In contrast to the detailed clinical account, the chapters on serology, vaccination, epidemiology, pathology and differential diagnosis are brief and inadequate. This is particularly true of the bacteriologic part. As causative agents, he enumerates: Shiga, Schmitz, Y, Strong, Sonne and Flexner organisms. No attempt is made to corroborate the clinical material of this book with the bacteriologic findings. In 1941 no bacteriologic examinations were done; in 1942, in 67 out of 72 bacteriologic examinations of "clinical" dysentery cases, results were negative.

The treatment of bacillary dysentery is discussed in greater detail. The author has stressed the necessity for adequate prophylaxis and early care in even mild cases: Bedrest, warmth, adequate diet and spasmolytics are important, but in no circumstances should the patient receive opiates. In severe cases, the water, mineral and protein balance must be watched and maintained. Phage and serum treatment are disclaimed, with the possible exception of the use of monovalent Shiga serum in suitable cases of Shiga infections. Various sulfonamides are strongly recommended as effective. The prognosis depends on the severity of the individual case and on early and adequate treatment. It is poor in chronic cases with anatomic enteric changes. It is stressed that complete cure should be acknowledged only after a dysentery patient has been found permanently free from signs under conditions of normal activity and normal diet.

The book will be of moderate interest to the gastroenterologist but is too diffuse to be of value for the practitioner or the scientific worker.

Accessory Bones of the Human Foot: A Radiological Histo-Embryological, Comparative-Anatomical, and Genetic Study. By Dyre Trolle. Translated from the Danish by Elisabeth Aagesen. Denne afhandling et af det lægevidenskabelige Fakultet antaget til offentligt at forsvares for den medicinske Doktorgrad, København, 1947. Paper. Pp. 272, with 127 illustrations. Einar Munksgaard, Nørregade 6, Copenhagen, K, 1948.

An extensive and comprehensive monograph on the radiologic, histoembryologic, comparative anatomic and genetic study of the accessory bones of the human foot. It is composed of a short introduction, four chapters, summary and conclusions. The main purpose of this volume, according to the author, is to test previous histoembryologic findings to see whether bones preformed in hyaline cartilage do exist, and to attempt to corroborate the philogenesis as well as other possibilities of origin of these bones. This task the author has accomplished magnificently.

The first chapter contains drawings of the bones of the foot showing the sites of the accessory bones discussed, some 35 in number. Following this is an incidence table with percentage indications including other investigators' data to the present plus the author's data, which are based on the examination of 250 pairs of feet. The remainder of this chapter is given to brief descriptions of the individual accessory bones, which are illustrated by sketches and radiographs.

In chapter 2 the author sets forth his own histoembryologic observations. The ages of the subjects were based on the menstruation age calculated with Streeter's curves, and the observations were made from serial sections of the individual feet. From all the data the author finds 11 of the 35 considered as independent cartilaginous elements. Of these, 10 per cent are exclusively in and about the tarsus, more than 45 per cent about the metatarsophalangeal and the interphalangeal joints and more than 22 per cent of both categories.

Chapter 3 contains a summary of the data accrued to date of all the various investigators who have used histoembryologic methods in human and/or animal embryos. In chapter 4 is a lengthy discussion of the genesis of these accessory bones. The summary sets forth, on a chapter basis, the major conclusions reached by the author from his own work and the work of others. This volume will be of interest to the anthropologist, radiologist and to the medicolegalist as a most useful reference work.

Bentley's Text-Book of Pharmaceutics. Revised by Harold Davis, B.Sc., Ph.D., Ph.C., with the Collaboration of M. W. Partridge, B.Pharm., B.Sc., Ph.D., and A. I. Robinson, Ph.C. With Contributions by W. A. Broom, B.Sc., F.R.I.C., M. Ellis, M.Sc., F.L.S., and H. A. Turner, B.Sc., Ph.C., D.B.A. Fifth edition. Cloth. $7.50. Pp. 1100, with 307 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

The first edition of this textbook was published in 1926. The new edition follows the design of the earlier editions, but where necessary it has been completely revised and rewritten. It presents the conventional type of information which has long been used in introductory courses in pharmacy, but it does this in an unusually clear and concise manner. Part I includes a brief history of the British Pharmacopoeia, and part II is devoted to general principles involved and the apparatus and methods employed in small scale pharmaceutical operations. Part II is followed successively by sections on pharmaceutic manufacturing, dispensing, microbiology, surgical dressings, sutures and ligatures and pharmaceutic preparations.

The book is written from the viewpoint of the needs of British pharmacy students and pharmacists which, in several respects, are different from those in the United States. However, since basic principles are common to all, the book may be advantageously used for supplementary reading by American students and practitioners of pharmacy and others interested in the subjects covered. The text is correlated with the 1948 British Pharmacopoeia and with the British Pharmaceutical Codex. Many of the drugs listed in these two compendiums are identical with or comparable to those of the United States Pharmacopeia and the National Formulary. Thus in many instances much of the explanatory and interpretative material applies equally in this country and in countries where the British Pharmacopoeia and British Pharmaceutical Codex are official. The book is documented with a limited number of significant references and includes a satisfactory index. The printing and binding are of good quality.

Applied Psychoanalysis: Selected Objectives of Psychotherapy. By Felix Deutsch, M.D. Cloth. Price, $3.75. Pp. 244. Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

The author describes a short intensive method of psychotherapy which has been developed in the search for short methods of applying analytic technics. The method described is "sector analysis," wherein an attempt is made to bring to light the unconscious determinants underlying the most prominent presenting word symbols of the patient as they are observed in the first or early interviews.

Case illustrations are supplied, wherein the therapist, by repetition of words chosen as symbols of the underlying conflict, keeps the patient concentrating on the particular psychic sector that relates to conscious presenting symptoms. The author discusses the material presented by the patient throughout the course of case illustrations, pointing out indications of developing transference and word bridges between the present and the past.

Data relating to treatment results of this method for large numbers of cases are not provided. The volume should be of interest to psychiatrists engaged in the development of useful methods of short term psychotherapy.

Acute Appendicitis and Its Complications. By Frederick Fitzherbert Boyce, M.D., Assistant Professor of Clinical Surgery, Tulane University of Louisiana School of Medicine. Cloth. $8.75. Pp. 487, with 81 illustrations. Oxford University Press, 114 Fifth Ave., New York 11, 1949.

The author, an assistant professor of clinical surgery in Tulane University, justifies his publication by the estimated 5,153 deaths from appendicitis in the United States in 1947, due largely, he believes, to procrastination, purgation and an unwarranted dependence on chemotherapy and antibiotics. As a basis he has analyzed the case histories of 6,441 patients treated for acute appendicitis at the Charity Hospital, New Orleans. In this series there were 320 deaths. The history of appendicitis, its etiology, diagnosis, treatment, special types and the relation of age, pregnancy and trauma are carefully considered, with many illustrative case reports and pertinent excerpts from the literature. While accepting recurrent appendicitis, the author apparently follows the debatable opinion of Hertzler and Boyd on the nonexistence of chronic appendicitis as an entity.

For the most part, the treatment in relation to the operation and preoperative and postoperative care is modern and well presented. Many will agree that sulfonamides should not be placed in the peritoneal cavity. Some will not agree that cotton, silk or silver wire are the best suture materials for a contaminated abdominal wound or that a triple occlusion with two purse-string sutures is preferable to a simple ligation of the appendiceal stump. The old opinion that the general peritoneal cavity can be drained is quoted, and the present use of nonirritating aspiration drains to the exclusion of adhesion-producing gauze packs, rubber tubes and cigaret drains is not included. Appendicitis is a common cause of perinephritic abscess, and in draining the abscess the appendix should be exposed through the lumbar incision. While this relationship is not discussed, a death from the unremoved appendix is reported. With these few exceptions the book is unusually thorough and modern and is recommended to those who desire a broad knowledge of this important subject.

Malariology: A Comprehensive Survey of All Aspects of This Group of Diseases from A Global Standpoint. By sixty-five contributors. Edited by Mark F. Boyd. Volumes I & II. Cloth. $35 per set. Pp. 1-787; 788-1643, with 436 illustrations. W. B. Saunders Company, 218 W. Washington Sq., Philadelphia 5; 7 Grape St., Shaftesbury Ave., London, W.C.2, 1949.

The editor of this reference work has been a malariologist for more than a score of years and is well qualified for his difficult task. He has obtained the cooperation of American and foreign contributors, including 12 from Great Britain, 2 each from Brazil and the USSR and 1 each from Australia, East Africa, France, India, Italy, Panama, South Africa and Venezuela. No aspects of malariology and no malarious areas of the world have been omitted from consideration. In fact, few medical reference books on a given disease have had better balance.

The 70 chapters of this authoritative and comprehensive survey of malariology include history, parasitology, entomology, epidemiology, pathology, clinical aspects, control and therapeutic malaria. Most standard technics for dealing with plasmodia, Anopheles mosquitoes, malaria surveys, larvicides, imagocides, ditching and other control measures are included, and the text is illustrated by over 400 figures. There appear to be no more than what might be judged an average number of inaccuracies, and none is serious enough to be detailed in this brief review.

The editor has maintained ably a readable style throughout, yet the quality of individual contributions naturally varies. In particular, one must note that the chapter (48) dealing with treatment of patent infections is disappointing. For example, it makes no reference to such standard drugs as chloroquine diphosphate and chlorguanide hydrochloride or to the combined use of quinine and an 8-aminoquinoline. These antimalarials have some theoretical consideration in an earlier chapter (46), but little attention is paid to the literature since 1946. By way of contrast, the accounts of clinical signs and symptoms and of the relationship between the clinical course of the several malarias and the underlying parasitology are unusually good. So, too, the various chapters on the natural history, taxonomy and classification of anopheline mosquitoes are excellent. Indeed,

the general quality is above average, and the work as a whole constitutes a veritable mine of useful data.

There are no colored plates of the plasmodia, such as one would expect in a reference book on malaria. Several pages are devoted to microphotographs of the parasites, but these seem merely to emphasize the lack of good plates in color. However, the format, type and illustrations are good. There are numerous bibliographic references, and the index is unusually complete. This new treatise on malaria is undoubtedly the best so far in any language and will be a standard reference work. It should have a place in every medical library of importance.

Outlines of Biochemistry. By Ross Aiken Gortner. Edited by Ross Aiken Gortner Jr., Professor of Biochemistry, Wesleyan University, Middletown, Conn., and Willis Alway Gortner, Head, Department of Chemistry, Pineapple Research Institute, Honolulu, T. H. Third edition. Cloth. Price, $7.50. Pp. 1078, with 125 illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C. 2, 1949.

This revision, as was true of the earlier editions, deals primarily with the pure chemistry of biologic materials; relatively brief summaries are made of the physiologic aspects of these substances.

Section I covers the principles of colloids, with emphasis on those principles necessary for an understanding of biologic processes. These first 276 pages are an excellent elementary text on colloid chemistry. Section II deals with proteins. The structure, analysis, chemistry, physical chemistry and metabolism of proteins and amino acids are discussed. The last chapter in this section is a brief discussion of alkaloids and other miscellaneous nitrogen-containing compounds. Section III offers discussions on carbohydrates and related substances. This section covers carbohydrates, glycosides, saponins, pectins, lignin and tannins. A new chapter on carbohydrate metabolism has been added to this edition. Section IV discusses simple and compound lipids and essential oils. A new chapter on lipid metabolism has been added to this edition. Section V deals with plant pigments, including chlorophyll and the carotenoids, flavones, xanthones and anthocyanins. Section VI discusses biochemical regulators, including vitamins, hormones and enzymes.

There are many references throughout the book. The literature seems well covered in most sections to about 1946; the biologic regulator section has many references as recent as 1948.

A Text-Book of Pharmacognosy. By George Edward Trease, B.Pharm., Ph.C., F.R.I.C., F.L.S., Reader in Pharmacognosy and Head of the Department of Pharmacy in the University of Nottingham. Revised with the Assistance of H. O. Meek, Ph.C., H. E. Street, B.Sc., Ph.D., Ph.C., and E. O'F Walsh, B.Sc., Ph.D., A.R.I.C. Fifth edition. Cloth. $8. Pp. 811, with 286 illustrations. Williams & Wilkins Company, Mt. Royal & Guilford Aves., Baltimore 2, 1949.

This textbook, compiled by a well known English pharmacognosist, contains a variety of information dealing with many phases of the science of pharmacognosy. Its subject matter is divided into five parts, a glossary and an index. Part I contains chapters on the history of the science, London commerce in crude drugs, enzymes in vegetable drugs, the cultivation of medicinal plants, the collection, drying and storage of drugs, and insects and other pests in drugs. Part II deals with drugs of vegetable origin and part III with drugs of animal origin. The two most widely used and most scientific systems of classification are discussed. The author has chosen wisely the taxonomic or phylogenetic system of classification for the more detailed treatment of the drugs which are grouped under their respective phyla in the two kingdoms. Part IV, Chemistry, contains chapters on drug constituents, extraction of drugs, fluorescence and chromatographic analysis and exercises on the valuation of drugs. In part V are found chapters on the microscope, microscopic technic, fibers and surgical dressings, cell structure, cell contents, microscopic study of drugs, examination of powdered drugs and quantitative microscopy.

The book is well illustrated throughout. Its nine maps of different areas of the world and the countries wherein the most important medicinals of plant and animal origin are produced are accompanied with opposite pages of legends carrying the numbers of items corresponding to the numbers which are found on the maps.

Enuresis or Bed-Wetting. By R. J. Batty, M.D., B.Sc., D.P.H. Second edition. Cloth. Price, 9s. 6d. Pp. 103, with 9 illustrations. Staples Press, Ltd., Staples House, 14 Great Smith St., London, S.W.1, 1948.

The author has had extensive experience with the problem of bedwetting. His effort is to arrive at rational treatment based on thorough study of the causes for enuresis. The anatomic and physiologic basis for micturition is carefully and fully discussed. Physical factors, ranging from anatomic defects to the presence of infection with threadworm (Trichuris trichiura), are carefully inquired into. Enuresis is seen as a problem closely related to poor environmental and physical hygiene and poor training. The necessity for full and complete physical study, with inquiry into the home setting that may contribute largely to the occurrence of the symptom, is emphasized. Rational treatment is based on improvement in hygiene, with practically routine administration of anthelmintics and with primary emphasis on training procedures. Psychotherapeutic procedures are limited to suggestion such as hypodermic administration of sterile water, reward and reassurance.

The author reports a large measure of success in the treatment outlined. The impression is gained that the children treated were largely exposed to unhygienic physical environment and much parental neglect. The discussions are sound as far as they go. Although the author refers to and appreciates the fact that psychologic factors play a role in enuresis, the discussion is most limited and there is no evidence that the author has considered enuresis as a symptom of neurotic disturbance or as evidence or neurotic character structure. The fairly full literature on this aspect of the problem is completely ignored. For this reason, the little book must be regarded as a partial presentation of the problem of enuresis, excellent in the area it covers, but lacking in the failure to expose adequately the psychologic aspects of the problem.

Helpful Hints to the Diabetic. By William S. Collens, B.S., M.D., Chief of the Diabetic Clinic, Maimonides Hospital, Brooklyn, New York, and Louis C. Boas, A.B., M.D., Chief of the Diabetic Clinic, Greenpoint Hospital, Brooklyn, New York. Cloth. $3. Pp. 135, with 64 illustrations. Charles C Thomas, Publisher, 301-327 East Lawrence Ave., Springfield, Ill., 1949.

This is an exceptionally good, brief manual for diabetics. It is concise and scientifically accurate. It defines and describes the disease and clarifies the roles of diet, insulin and general health supervision. It contains excellent tables of food values and charts. The administration of insulin is explained in a series of clear wash drawings showing the use of ordinary and spring injector syringes. Testing of the urine is illustrated with color charts showing the appearance of negative, trace and positive Benedict reactions with the tablet method. Travelers' insulin kits are illustrated. An excellent series of 24 hour circle charts explains the relationship of insulin to meals for each type of insulin. The book offers a scholarly approach, yet is clear enough for any intelligent patient to understand. It is reassuring in tone. There is an excellent section on diabetes quackery. The press work and type face are beautiful, and there are excellent color plates. This can be designated as a genuinely outstanding book for physicians to recommend to their patients.

Chemical Constitution and Biological Activity. By W. A. Sexton, B.Sc., Ph.D., F.R.I.C. With a Foreword by Professor A. R. Todd, M.A., D.Phil., D.Sc., F.R.S. Cloth. 35s. Pp. 412, with 42 illustrations. E. & F. N. Spon, Ltd., 22, Henrietta St., London, W.C.2, 1949.

The material of this book is the outgrowth of many sciences, and the success or failure of accomplishing the titular task of relating chemical constitution to biologic activity depends as much on the status of current knowledge in such wide fields as chemistry, biology and physics as it does on the ability of the author. Although it is possible now to establish many links between chemical constitution and biologic activity, it will become obvious to the reader that many gaps still remain. This is not surprising, considering that the bulk of present knowledge of this field is the result of research carried out within the last two decades. It is heartening to note, however, that the acceleration of research and the accumulation of new literature is so rapid that the author found it necessary to set

the middle of 1947 as the deadline for receipt of papers to be considered for the textbook. There is no doubt that this book will stimulate even greater efforts in the field.

The book is divided into two parts. The first part deals with macromolecules, chemical mechanisms determining drug activity, physicochemical considerations, modification of drugs by organisms and the effects of specific chemical groupings. The second part of the book deals with selected topics such as nicotinamide and riboflavin, vitamin B_{12}, paraaminobenzoic acid and sulfonamide drugs, growth factors, the porphyrins, choline and its derivatives, quinones and quinoid substances, symbiosis, parasitism and antibiotics, some aspects of hormones, miscellaneous bactericides and fungicides, antiprotozoal drugs, insecticides and anthelmintics, cancer, plant growth regulators, antigens and antibodies. Numerous references to the literature are given at the end of each chapter.

The wide range of subjects covered and the scholarly handling of them testify to the ability of the author. The omission of certain subjects, such as the carotenoids, is deliberate and results from our present lack of knowledge of the mechanisms whereby these substances exert biologic activity. Although the book is directed primarily to the chemist, the biologist or pharmacologist who has an appreciation of molecular structure will find the book both stimulating and useful.

Einführung in die innere Medizin. Von Dr. Hans Julius Wolf, ausserplanmässiger Professor für innere Medizin an der Universität Göttingen. Fourth edition. Cloth. 27 marks. Pp. 653, with 73 illustrations. Georg Thieme, Diemershaldenstrasse 47, (14a) Stuttgart O; Agents for U. S. A: Grune & Stratton, Inc., 381 4th Ave., New York 16, 1949.

By dint of a judicious use of large pages, some fine print, a careful choice of material and utmost concreteness of expression, the author of this textbook has achieved a comprehensive and altogether commendable coverage of the field of internal medicine. Emphasis is on diagnosis, symptomatology, pathologic physiology and prognosis. The recommendations for treatment tend to be vague and general, no distinction is made between generic and proprietary names for drugs, and these names are commonly abbreviated while personal names are spread out. These continental customs are, of course, well established, but it is time that their wisdom was questioned. In every other respect the book combines the results of a profound knowledge of the subject with a most painstaking thoroughness of presentation; it is remarkably free from errors, well illustrated, beautifully bound and carefully indexed. It will be a useful source of information and suggestions to students and practitioners of internal medicine and deserves a place in the library of every medical school.

Drinking's Not the Problem. By Charles Clapp, Jr. Cloth. Price, $2.50. Pp. 179. Thomas Y. Crowell Company, 432 4th Ave., New York 16, 1949.

This volume is written as an aid to potential alcoholics or alcoholic "repeaters" in their attempts to find individual solutions to the drinking problem and to underlying emotional difficulties. The book urges self analytic methods that may bring better self knowledge and through this a resolution of personal conflicts. Use of a psychiatric team is encouraged after a start toward recovery has been made. The point of view is expressed that the mere cessation of drinking is not sufficient to correct alcoholism, as pressure of emotional conflicts will again build up and lead to the same attempt at a false solution through alcohol. Several case histories of persons said to have found a solution through the methods described are mentioned.

Health Instruction Yearbook, 1949. Compiled by Oliver E. Byrd, Ed.D., M.D., F.A.P.H.A., Professor of Health Education, and Director, Department of Hygiene, School of Education, Stanford University. Foreword by Charles E. Smith, M.D., President, California State Board of Public Health. Cloth. $3.50. Pp. 276. Stanford University Press, Stanford University, California; Oxford University Press, Amen House, Warwick Sq., London, E.C.4, 1949.

This book contains material relating mainly to 1948. Each of the six previous editions has been reviewed in THE JOURNAL. This, like its predecessors, is a useful volume for the desk of the public health official, the educator or the practicing physician, giving in brief form a comprehensive summary of the year's developments in scientific and social medicine.

Quantitative Ultramicroanalysis. By Paul L. Kirk, Ph.D., Professor of Biochemistry, University of California, Berkeley. Cloth. $5. Pp. 310, with 113 illustrations. John Wiley & Sons, Inc., 440 4th Ave., New York 16; Chapman & Hall, Ltd., 37-39 Essex St., Strand, London, W.C.2, 1950.

To appreciate this book properly it is necessary to understand what is meant by ultramicroanalysis. This is easily achieved by citing the weights of samples used in some of the better known analytic methods. Macro-methods employ samples of the order of 0.1 Gm.; semimicro-methods require samples of 10 to 20 mg., and micro-methods use samples of about 1 mg. The ultramicro-method employs a sample of 0.001 mg. The value of a technic which permits the use of samples of ultramicro proportions is evident to the biochemist, clinician and biologic research worker. It is interesting to note that most of the fundamental chemistry of plutonium was elucidated by the use of the ultramicro-method before as much as a milligram of the element was synthesized.

To anyone employing or planning to employ the ultramicro-method, Professor Kirk's book will save a great deal of time and effort. The methods in the literature have been carefully screened by the author, and only those which fall within the limits of accuracy required in analytic practice have been included. The book deals with general, volumetric and colorimetric apparatus and technic and the analysis of metallic and nonmetallic constituents by titrimetric methods, volumetric gas methods, spectrophotometric and physical methods. There are 113 illustrations and many references to the literature. The book should prove of interest to many chemical, biochemical and biologic research investigators.

Personality Projection in the Drawing of the Human Figure (A Method of Personality Investigation). By Karen Machover, Kings County Psychiatric Division, New York, N. Y. Publication No. 25, American Lecture Series: A Monograph in American Lectures in Psychology. Edited by Molly Harrower, Ph.D. Cloth. Price, $3.50. Pp. 181, with illustrations. Charles C Thomas, Publisher, 301-327 E. Lawrence Ave., Springfield, Ill., 1949.

This volume discusses a relatively new projective technic, that is, study of drawings of the human figure as a method of personality investigation. The book is divided into three parts. Part 1 discusses origin of methods and theoretical considerations involved in the problem as they relate to the phenomenon of projection of unconscious material, the constancy of such projections and the mood and sources of projection. Part 2 discusses mechanisms of interpretation of the drawings, such as meaning of anatomic configurations and aspects of clothing. Indications of conflict and differential artistic treatment of male and female figures are described in detail. Part 3 provides illustrations of drawings which show diagnostic indications of several neurotic and psychotic types.

The detail into which the author has gone in describing proper methods of application of the technic make this volume helpful to anyone interested in the use of practical projective technics in character analysis.

The Transuranium Elements: Research Papers. Edited by Glenn T. Seaborg, Joseph J. Katz, and Winston M. Manning. Parts I & II. National Nuclear Energy Series, Manhattan Project Technical Section, Division IV—Plutonium Project Record, Volume 14 B. Cloth. $15. Pp. 859; 861-1733, with illustrations. McGraw-Hill Book Company, Inc., 330 W. 42nd St., New York 18; Aldwych House, Aldwych, London, W.C.2, 1949.

On Jan. 28, 1941 a report by G. T. Seaborg, E. M. McMillan, J. W. Kennedy and A. C. Wahl was submitted to the *Physical Review* for publication. The report, withheld from publication until 1946 because of the nature of its contents, set off the most massive research program in the history of science. The report announced the discovery of a new transuranic element, which was later named plutonium. The report is reproduced in its original form in part I of this two volume collection of about 160 research papers. Most of the papers deal with the production and chemistry of plutonium. A lesser number of papers are devoted to neptunium, americium and curium. Several papers concerning uranium, radium, actinium, thorium and proactinium are included for convenient reference.

Although this collection of research papers deals primarily with the work carried out under the sponsorship of the War Department's Manhattan Project during the war years, several of the papers are of recent origin.

QUERIES AND MINOR NOTES

The answers here published have been prepared by competent authorities. They do not, however, represent the opinions of any official bodies unless specifically stated in the reply. Anonymous communications and queries on postal cards will not be noticed. Every letter must contain the writer's name and address, but these will be omitted on request.

HARD FLOORS AND FATIGUE

To the Editor:—I have been asked to settle an argument between the safety inspector and the fire chief of this installation. One says that resilient floors have decreased industrial disabilities attributable to fatigue; the other thinks that rubber heels would be equally useful. Is there proof that hard floors are harmful if rubber heels are worn at all times by workers involved?

M.D., Oregon.

ANSWER.—Standing motionless on a hard floor introduces no variable over resilient surfaces, but walking or running is different. Such acts impart to the body a coarse, irregular and infrequent vibration constituting a physiologic insult. Damage from such vibrating tools as pneumatic drills or jackhammers is well established and chiefly is represented by synovitis, neuritis, local vascular instability and pathologic fatigue. The results from walking on hard floors are less well defined but are related. The muscles are held in a state of protective contraction; articular surfaces are rammed against one another; rarely, soft tissues about the ankles swell. Fatigue is in evidence. However, some degree of inurement arises, for which there is inadequate explanation. It is the newcomer to hard floors who suffers the greatest discomfort. The infantryman subjected to long marches on hard pavement prefers his heavy marching shoes, but the hospital nurse continually walking on terrazzo floors elects shoes with rubber heels and sometimes rubber soles. In general, rubber heels and soles mitigate the body's impact on hard surfaces. With possible rare exception, floor resiliency and devices for shock absorption such as rubber heels and carpets promote bodily comfort.

ENDOMETRIOSIS

To the Editor:—Are there any reports which state whether infertility is a result of the progression of endometriosis or whether infertility occurs before the endometriosis and is just a coincidental finding? What is the best medical treatment for beginning or early endometriosis in a 23 year old nulliparous woman?

M.D., Illinois.

ANSWER.—Available reports do not specifically answer the first question. In many cases of endometriosis the patient had used contraception to avoid pregnancy, so it is not always possible to determine whether the patient was fertile or not. The same problem has been observed in infertility studies. One commonly encounters patients who avoided pregnancy by contraception for a long time following marriage but did not become pregnant on discarding these methods. "One child sterility" has been suggested as due to endometriosis. It is not uncommon when operating on patients with endometriosis to discover that the patient had one child and then dysmenorrhea developed. This seems to be commoner in patients with endometriosis involving one or both ovaries. One suggestion was that the capsule of the ovary was thickened and scarred by the endometrial implants, but experimental work failed to reveal any capsule about the ovary. The infertility associated with endometriosis has never been fully explained.

The treatment at present is experimental. No conclusive results have been proved, but results are at least encouraging. One can understand that the treatment is difficult to evaluate because the implants should be observed both grossly and microscopically before a cure can be reported. About the only place where this can be done, aside from rare extragenital lesions, is in the vagina (endometriosis rarely occurs in the cervix).

For the single girl two methods are in practice: one requires use of rather large doses of estrogens (enough to suppress ovulation) for 18 to 21 days of each cycle; medication is then discontinued until the next cycle, with persistent and continuous therapy for two or three months at a time to completely suppress ovulation. At least another year or two probably will be required to evaluate this method.

The second method of treatment is surgical. All visible implants seen in the pelvis or on the ovary are removed, the cervix dilated thoroughly and the uterus suspended. This is considered radical by some and conservative by others.

The married woman should be advised to become pregnant without delay. If pregnancy does not occur, after proper sterility studies on both parties, the other aforementioned methods should be used.

BURNING SENSATION IN EYES

To the Editor:—Since I had the water softener tank removed the water does not make my eyes burn when I take a shower. What is in the softener to cause burning sensation in the eyes?

S. P. Strange, M.D., San Francisco.

ANSWER.—This query fails to indicate the type of water softening chemicals involved. Hence, this reply comprises generalities. Many wholesome untreated waters are distinctly alkaline, presenting a p_H value approximating 8.5, while the p_H of tears is 7.35. Slight eye irritation may result from any exposure. On occasion, water-softening systems make use of phosphates, some of which lead to soluble complexes of an alkaline nature. Almost any soap may irritate the eye and notably those rich in alkali builders, which chiefly depend on the action of alkali phosphates. These same phosphates, apart from soap used in bathing but present in the water itself, may lead to eye irritation. In the zeolite process of water softening, the one presently regarded as best suited for household purposes, the p_H value of the water is somewhat increased even though the hardness be reduced to zero. Nothing in these statements implies that any properly household-softened water is conducive to any serious eye damage. In industrial practices, such as in the softening of boiler water, a number of chemicals that might be utilized could constitute damaging eye irritants. This group includes sulfuric acid and chromates.

DYSMENORRHEA

To the Editor:—A woman of 31 years has much cramping and pain with her menses, which in the past two or three years have become scant and recently somewhat delayed. Eight years ago she had ruptured uterus during labor (first pregnancy). Surgery was done and she made a good recovery. She and her husband fear pregnancy. They have adopted two children. Physical examination reveals no general or pelvic abnormality. She has been advised to have a hysterectomy, apparently because of the belief that she probably is having menopausal symptoms. Is hysterectomy likely to do her more good than harm? Chorionic gonadotropin and estrogenic hormones have given some relief, but she feels that she does not want to continue that treatment indefinitely.

M.D., Kansas.

ANSWER.—Is this a primary or acquired dysmenorrhea? The history indicates that the pain started after the ruptured uterus. Dilatation or curettage should be done to rule out cervical stenosis or stricture and to determine whether polyps or pedunculated fibroids in the cervical canal cause the cramps. Endometriosis also must be considered, particularly because of the ruptured uterus and the possibility that some endometrium was extruded into the abdominal cavity at the time. Careful pelvic examination, including rectovaginal examination, frequently will reveal painful nodulations in the pelvis, particularly behind the cervix, in the uterosacral ligaments and occasionally around the ovaries. Often a fixed retrodisplacement is noted also. There is no specific diagnostic test for this condition, so that laparotomy is the only way one can be sure it is present. Inflammatory residues, preceding, incident to or concomitant with the ruptured uterus may give rise to painful periods.

Dysmenorrhea is an illusive symptom difficult to evaluate because of the patient's psychic makeup.

The question of pregnancy poses other problems. If the tear in the ruptured uterus was not long and it was adequately repaired without subsequent rise in temperature, there need be no fear of pregnancy. If the tear was long and the uterus badly damaged, the uterus probably should have been removed at the time of operation. The cause of the rupture probably

is of some importance. If it was due to cephalopelvic disproportion or traumatic delivery and was adequately closed, pregnancy should not be denied the patient. If, however, it occurred spontaneously without disproportion, prolonged labor or trauma, something may be amiss in the uterine musculature, in which case it might occur again. In any event, if pregnancy is allowed, cesarian section should be done two weeks prior to term or at the first signs of uterine "pains."

Sometimes the giving of estrogenic hormone in moderately large doses either for the first three weeks following a period or continually for two or three months will effect improvement in cases of endometriosis. Patients with endometriosis are often less fertile than those who do not have it.

HABIT DISORDER IN INFANT

To the Editor:—What are the causes of an 8 month old male infant's striking his head repeatedly against his crib mattress when asleep at night? The head striking does not occur during his daytime naps. This began at the onset of teething at 6 months and is an almost daily occurrence. The head striking is rhythmic and occurs in a series of 3 to 8 blows with varying time intervals between episodes. The infant apparently does not hurt himself, as he does not awaken. Delivery was normal. At 8 months the infant weighs 22 pounds (9,979 Gm.), eats well and is alert and happy during the day. Is any treatment necessary, and, if so, what is the treatment? Sheldon M. Caplan, M.D., New Bedford, Mass.

Answer.—The fact that the movements of the head described in this 8 month old infant occur only when he is asleep at night probably would allow one to designate the condition as a sleep disturbance. In the same class of disturbances are included restless sleeping, nightmares, night terrors, talking in the sleep and grinding of the teeth.

A condition of head nodding associated with intermittent nystagmus and also with partly flexed head, or torticollis, has been described as occurring in infants from the sixth to the eighteenth month of life. This condition is known as spasmus nutans.

It is more commonly noted in the winter months, and relationships have been noted between spasmus nutans and dark rooms and also rickets. However, the head nodding in this condition is seldom seen when a child is in a horizontal position and is usually brought out when the infant is in a sitting position. The infant described is no doubt suffering from a habit disorder which it will perhaps outgrow. No treatment other than general hygienic care is necessary.

EFFECT OF COLOR ON HEALTH

To the Editor:—A man sprays red paint on fire extinguisher bodies for five to six hours daily. Is the continual use of this relatively bright red color apt to have any specific emotional or physical effect that is harmful? Richard A. Higley, M.D., Menominee, Mich.

Answer.—Through many psychologic appraisals there runs the belief that color influences human behavior, largely on an individualistic level and chiefly in relation to previous unpleasant experiences associated with a particular color. In blood bank rooms the highest percentage of fainting among donors arises when walls are painted a light green. The human eye often is hampered by demands for continuous color adjustment to two or more simultaneously present colors, notably red and blue. Workers exposed to these combinations sometimes manifest dizziness, nausea and eye strain. Contrary to the usual claim of the interior decorator, no color or color combination gives a person any constant feeling of coolness or warmth, apart from his psychologic conditioning. White constantly in front of any workman may provoke disturbing physiologic reactions from glare. Usually red is no more distressing than any other color. Whatever color is associated with earlier disagreeable experiences in the life of any person may elicit hedonically distasteful reactions. In the present instance the wearing of lightly tinted green goggles may help if the workman requires corrective measures.

TESTOSTERONE PROPIONATE AND MAMMARY CARCINOMA

To the Editor:—A patient has had a radical mastectomy because of cancer. For how long postoperatively should testosterone propionate be given? M.D., Illinois.

Answer.—Routine administration of testosterone propionate following mastectomy for carcinoma of the breast is not generally practiced. This method of therapy has been reserved for the treatment of osseous metastases from breast carcinoma. There has been no accumulation of data to show that its use postoperatively is successful in preventing recurrence. It would seem, therefore, that the substance should be withheld in this case until evidence of recurrence is present.

CONGENITAL ABSENCE OF LIMBS

To the Editor:—A 3 year old boy was born without upper extremities, the right femur and most of the left femur, as well as the left fibula and one metatarsal and one toe of each foot. He is unable to walk but can support himself readily with assistance and uses his feet successfully as hands. Can you suggest aid in caring for the patient? The left foot is in valgus but can readily be brought to its normal position and shape. The right foot is fixed in equinovarus position. John W. Derbyshire, M.D., Sebastopol, Calif.

Answer.—The management of a child with congenital anomalies such as this is makeshift at best. Since the child uses his feet rather successfully as hands, it is probable that further encouragement in this respect should be continued. It is doubtful that the deformities of the lower extremities could be so corrected that they would be useful for walking and still satisfactorily carry out the functions of the upper extremities. The equinovarus deformity of the right foot could possibly be corrected by a series of wedge casts together with heel cord lengthening if necessary. However, before carrying out this correction, one should be sure that such a procedure would not impair the function for which this foot is now being used. When the child is older he should have some choice in the matter. It is possible that at a later date the small segments of femora which are present could be fused to the pelvis so as to allow the child to stand with stability, but if such an operation were done the feet could not then be approximated to the upper portion of the body. Periodic observation by a competent orthopedist particularly acquainted with congenital deformities of children is advisable. This child should be observed at periodic intervals for management and treatment throughout his growing years.

SECONDARY BLADDER NECROSIS

To the Editor:—A 38 year old woman has hematuria occurring two years after radium and high voltage roentgen therapy for a squamous cell carcinoma of the cervix. Cystoscopy revealed a hemorrhagic, superficial ulceration on the posterior wall of the bladder, and biopsy did not indicate tumor. Pelvic and rectal examinations revealed no abnormalities. How long a period after radiation therapy can radium burn of the bladder take place? Thomas E. Larkin, M.D., Jamaica, New York.

Answer.—Secondary irradiation necrosis in the bladder following the treatment of carcinoma of the cervix with large doses of roentgen rays and radium is not unusual. It is usually due to a greater susceptibility on the part of the patient to irradiation. Two persons receiving the same dosage may not react in the same manner. Secondary necrosis usually occurs from one to two years after the primary irradiation. During this time fibrosis takes place, which in turn produces obliteration of many of the vessels; the ischemia then results in necrosis and ulceration. Curettage of this area through a cystoscope with fulguration of the bleeding points is usually adequate to control the discomfort and hemorrhage. If the reaction is severe, a vesicovaginal fistula will probably result, and then excision of the fistula and repair of healthy tissue is indicated. If there is so much damage to the bladder that it is impossible to approximate any but irradiated tissue, then ureteral transplant into the bowel is the only solution to the problem. The implantation should be done above the level of the rectosigmoid flexure on the left and into the first loop of the colon as it descends into the pelvis on the right side. These points above the promontory of the sacrum should not be affected by the irradiation.

GASOLINE FUMES AND ALLERGY

To the Editor:—A 53 year old Negro has, on many occasions for thirteen years, been exposed to fumes from an automobile exhaust. Five years ago a cough developed with chronic rhinitis, which has been diagnosed as allergic on the basis of the observation of many eosinophils in his sputum and nasal secretions. Skin tests show positive reaction to a variety of foods and inhalants. What part can be ascribed to the inhalation of these fumes in the development of the allergy? Arnold B. Rilance, M.D., New Haven, Conn.

Answer.—Chemical irritants may constitute important predisposing, precipitating or aggravating factors in allergic disease of the respiratory tract as well as other organs. The chemical irritant may irritate the tissue and thus predispose to the onset of sensitization to true allergens. It may precipitate an allergic episode in the presence of exposure to an allergen which had not been giving active symptoms. In the presence of active allergic symptoms the chemical irritant may make the manifestations severer. Gasoline fumes belong to the group of irritants known to produce this effect.

MURMURS IN CONGENITAL HEART DISEASE

To the Editor:—Is the murmur in cases of patent ductus arteriosus due to the continuous passage of blood from one circulation to another or from the systemic to the pulmonic circulation. Does a murmur persist after ligation of the ductus? In a case of tetralogy of Fallot, do the auscultatory findings of the heart differ after an anastomosis of the subclavian and pulmonary arteries? How does this operative procedure influence the electrocardiographic pattern? M.D., New York.

ANSWER.—After adequate ligation of a patent ductus arteriosus, the continuous murmur characteristic of the anomaly disappears and does not return unless, which is exceedingly rare, there is a recanalization or a return of some communication between the aorta and pulmonary artery. However, not infrequently a systolic murmur persists. This is doubtless due to dilatation of the pulmonary artery itself or even of the aorta, more likely the pulmonary artery, the increased size of which may persist and continue to give rise to a systolic murmur. In tetralogy of Fallot the anastomosis of subclavian and pulmonary arteries gives rise to a continuous murmur, similar to that of a patent ductus arteriosus. So far as is known, however, this does not influence the electrocardiographic pattern, but the new communication tends to increase the heart size because it adds a new defect, consisting of a left to right shunt. The strain from this new defect has to be borne in mind from the standpoint of possible longevity of the patient.

CUTIS MARMORATA

To the Editor—I would appreciate information on the dermatologic condition known as livedo reticularis. John F. Noguera, M.D., Kingsville, Md.

ANSWER.—Livedo reticularis, also called cutis marmorata, is a descriptive name for a condition in which a bluish or purplish mottling occurs, usually on the extremities of younger persons when exposed to cold air. In rare cases, the distribution may be unilateral or more or less generalized and, according to Sutton, actual blistering and ulceration may supervene in severe cases. The reticulated pattern is due to the anatomic arrangement of the underlying arterial network. According to one concept, there is partial obstruction of the arterial supply due to frequent cooling, the obstruction occurring because of actual increase in the muscular coat, not mere spasm. Another explanation is that the vascular effects are produced by a substance liberated from the cells by the injury from cold, such substances having a histamine-like action. There are usually no subjective symptoms, the condition constituting a cosmetic defect only, and the treatment usually recommended is continued warmth to the involved areas. Syphilis, tuberculosis, toxic states, endocrine disorders and cardiac disease have all been listed as causative factors in isolated cases.

LIGATION OF HEPATIC ARTERY

To the Editor:—Is ligation of the right hepatic artery necessarily fatal in human subjects? M.D., North Dakota.

ANSWER.—Ligation of the right hepatic artery in the human subject is not necessarily fatal. Haberer (*Arch f. klin. Chir.* 78:557, 1905) found ligation of a major branch of the hepatic artery to be usually well borne by the dog. Any deaths were the result of peritonitis. There is some evidence (Markowitz, J.; Rappaport, A., and Scott, A. C.: *Proc. Soc. Exper. Biol. & Med.* 70:305, 1949) to indicate that penicillin might increase the survival rate by controlling peritoneal infection. Brunschwig (Brunschwig, A., and Clark, D. E.: *Arch. Surg.* 42: 1094 [June] 1941) refers to 18 cases of ligation of a major branch of the hepatic artery (in the human being) with 7 instances of immediate fatality and 11 instances of recovery.

INTERMITTENT CLAUDICATION

To the Editor:—A man aged 40 one year ago had mental disturbance, and was in a sanatorium for seven weeks. He had three shock treatments, and now appears to be normal mentally. A few months ago he had tingling in his finger tips for about a month and cramps and aching in his calves which was worse when he walked rapidly. He was unable to sleep on account of the pain. Examination showed symptoms of intermittent claudication of the right lower extremity and peripheral vascular occlusion. The oscillometric index of the right calf was 0.25 and of the right thigh 1. What treatment is suggested? M.D., Chicago.

ANSWER.—Intermittent claudication is a symptom of muscle ischemia on exercise. In this case it is due to an organic occlusion of the major arteries of the right lower extremity which may be due to atheromatosis, thromboangiitis obliterans or unrecognized embolism, in the order of their probability. Hypertension, high blood cholesterol or impaired sugar tolerance should be considered. If the cardiogram and concentration-dilution test are satisfactory, a lumbar sympathectomy should be performed. Intermittent venous hyperemia and prolonged administration of a nicotinic acid derivative that is a peripheral vasodilator (roniacol tartrate®; each tablet contains 50 mg. of the tartaric acid salt of the alcohol corresponding to nicotinic acid) are helpful. The opposite extremity should be carefully investigated for signs and symptoms of arterial insufficiency.

PROSTATIC CANCER AND CHEST PAIN

To the Editor:—In March 1945 I noticed symptoms of prostatic disturbance, and in February 1946 I visited a clinic, where my suspicions of cancer were confirmed. I was advised against operation and told I should take 1 mg. of diethylstilbestrol three times daily; if the urinary distress was not definitely relieved in one to three months, I was to return for a transurethral resection. I have continued to take the diethylstilbestrol daily ever since. About one and a half years later metastasis was shown by roentgenogram in the eighth right rib. The malignant lesion gradually spread, and spontaneous fracture occurred about eight months later. I was given high voltage roentgen irradiation in September 1948, with much relief from pain, and I was advised by a competent urologist to take more diethylstilbestrol, at least 10 mg. or better 15 mg. daily. I have taken an average of 10 mg. daily since. Gynecomastia is pronounced in both breasts, but there is no pain in the breasts nor have I discovered any nodules or other evidence of malignant growth, although there is considerable tenderness. I desire information on the prolonged use of the drug's inducing a mammary cancer and whether or not I should continue taking diethylstilbestrol and if so, what daily amount should I take? I now have severe pain in the right side of the chest and around the right costal margin. A roentgenogram did not reveal any pulmonary involvement. What can be done for this intercostal pain? M.D., Nebraska.

ANSWER.—A case of mammary cancer developing in a patient taking diethylstilbestrol has been reported. However, this is an isolated instance and may be coincidental. It is not advisable to stop taking the drug; however, the maintenance dose may be reduced to 1 mg. daily with probably as good effect as with larger dosages and fewer side effects. As for the pain along the intercostal nerves, a spinal nerve root block may bring gratifying relief. Irradiation of the pituitary gland has given prompt relief from severe pain in various parts of the body in some cases.

AMEBIC DYSENTERY

To the Editor:—A patient has had amebic dysentery for 30 years. He has long remissions and then diarrhea and soreness in the colon. He has had a number of proctoscopic examinations, which always show scars in the lower bowel and at times active ulcers. A few months ago he had slight jaundice and his liver was enlarged and tender on palpation. He lost his appetite; he had a large amount of bile in the urine, and the stools were white. This continued for almost 10 days. His liver is still enlarged and tender on pressure. He has not had fever or chills. He has lost about 50 pounds (23 Kg.) in the past eight months. He has no appetite and cannot work. He is a World War I veteran, and receives a pension from the government for his amebic dysentery, which was greatly aggravated in France in 1918. He is now totally disabled. Could the hepatitis that he has now be caused by the amebic condition? His last proctoscopic examination, three months ago, showed active ulcers in the lower sigmoid. F. A. G. Murray, M.D., Cumberland, Md.

ANSWER.—If the colon is ulcerated with Endameba histolytica in the ulcers, it is possible for the ameba to enter the liver and produce amebic abscesses. Usually there is a definite history of acute amebiasis preceding a liver abscess. Furthermore, liver abscess is usually accompanied with chills and fever. Infective hepatitis due to other agents, such as viruses, would have to be excluded. Cholelithiasis, which is usually accompanied with chills and fever, should also be excluded. The answer to this question can be determined only by further study.

DUPUYTREN'S CONTRACTURE

To the Editor:—Is there any cure for Dupuytren's contraction, either by medical or surgical therapy? H. S. Rubinstein, M.D., Baltimore.

ANSWER.—There is no medical cure for Dupuytren's contracture. The vitamin E therapy for this has been ineffective. Irradiation treatment is without permanent effect except to cause damage to the hand. Painstaking and thorough surgical excision of the proliferated fibrous tissue through special well planned incisions is the method of choice. Substitution of new skin may be necessary. Excision, if complete, cures in the region operated on, though contractures may occur later in the region beyond the surgical excision. Fasciotomy, a palliative procedure, in some cases is advisable preoperatively or in the aged. A recent summary of research by Tord Skoog may be found in *Acta Chirurgica Scandinavica* ([Supp. 139] 96:1-190, 1948).

SMOKING TOBACCO

To the Editor:—The recent article on smoking in the *Readers Digest* has raised questions. The statement was made that smoke from a pipe is greatest in nicotine concentration, cigaret smoke the least and cigar in between. It seems to me that the important factor is not the amount of nicotine in the smoke but the amount of nicotine which is absorbed into the system.

M.D., Nebraska.

ANSWER.—Although more nicotine is absorbed from tobacco smoke inhaled into the lung than from that barely taken into the mouth, studies have shown that this difference is not so great as may be imagined. Nicotine rapidly precipitates from the smoke onto the mucous membrane so that mere quiet smoking, without inhalation, deposits more than half the nicotine from the smoke. Smoking habits vary, and the amount of smoke contained in nicotine which is taken in by smokers either from pipe or cigarets depends on the force, frequency and volume of suction as well as on the nictotine content of the smoke itself. The length of the cigaret consumed and the form of the pipestem and the frequency with which it is cleaned also affects the nicotine content of the inhaled smoke and, consequently, the amount which is absorbed.

TIREDNESS AND OVERWEIGHT

To the Editor:—Five patients complain of tiredness and overweight (25 to 50 pounds) and mild lethargy. The pulse rate, blood pressure and temperature are normal. The basal metabolic rates and serum cholesterol per hundred cubic centimeters are as follows:

Age, Yr.	*B.M.R.*	*Serum Cholesterol, Mg.*
15	—9	273
25	—4	255
26	—12	185
40	0	232
50	—5	320

Should one assume that these patients are suffering from moderate hypothyroidism, or is the increased cholesterol value a reflection of faulty fat metabolism, which is causing their obesity. What other conditions should be considered?

M.D., New York.

ANSWER.—It would be desirable to secure a level of the basal metabolism rather than rely on a single determination. In some patients repeated observations reveal some lowering of the rate. The high concentration of cholesterol in the serum cannot be regarded as absolute evidence of hypothyroidism. Some of the patients would undoubtedly feel better as a result of weight reduction. A diagnosis of hypothyroidism would not be justified without a more definite lowering of the basal metabolic rate, although in occasional instances this disorder is present when the basal metabolic rate is not greatly lowered. A determination of the protein-bound iodine in serum would be of diagnostic value.

DISCHARGE FROM INVERTED NIPPLE

To the Editor:—A 24 year old white woman has complained for three years of a whitish, foul discharge from the inverted nipple of the left breast. The discharge cakes on the surface of the inverted nipple, is easily wiped away, with no resultant bleeding, and, must be wiped away about every eight hours; otherwise a foul odor prevails. The nipple has been inverted as long as the patient can remember—"definitely before the age of 14 years." There is no pain, no masses or induration and no palpable lymphadenopathy. The breasts are symmetric and not pendulous. There is no excoriation of the nipple or local signs of inflammation. The nipple can be retracted outward to just slightly above the level of the skin, but this is done with difficulty. The patient has two children of preschool age; she did not nurse them. The right nipple appears normal in every respect. Pelvic examination reveals nothing contributory. What are the steps in management of this patient?

L. J. Janis, M.D., Atascadero, Calif.

ANSWER.—This patient apparently has a chronic low grade infection of the nipple ducts. Local therapy will accomplish as much as any other type of treatment; frequent washing of the nipple with soap, especially one of the newer detergents combined with hexachlorophene followed by the local application of an antibiotic such as bacitracin or aureomycin ointment.

USE OF PROCAINE HYDROCHLORIDE WITH TOXOID

To the Editor:—Would the use in immunization of 0.5 cc. of 1 per cent procaine hydrochloride with a 0.5 cc. of fluid diphtheria, tetanus or pertussis toxoid result in any loss of antigenic effect of the toxoid? The procaine hydrochloride is used to diminish the burning of the toxoid after injection.

M.D., California.

ANSWER.—The combination of 1 per cent procaine hydrochloride should not diminish the antigenic effect of the toxoids.

PIERCING EARS FOR EARRINGS

To the Editor:—In *The Journal*, Nov. 12, 1949, page 812, you described a method of piercing ears for earrings using a preliminary suture. However, when the earring is passed through the suture tract, usually a week or two later, the barbed point of the earring often makes a false passage before it emerges through the skin and thus predisposes to infection. I have used the following method in 10 cases with excellent results. A 17-13 gage hypodermic needle, 1 to 3 inches (2.5 to 8 cm.) long is obtained. The gage of this needle is determined by the size of the barbed or threaded end of the earring. It should fit fairly snugly in the lumen of the needle. After application of an antiseptic and procaine solution, the sterilized needle is passed through the ear lobule and the barbed end of the earring is slipped into the lumen of the tip of the needle as far as it will go. The needle is then withdrawn from the ear lobule, carrying the barbed end of the earring with it. If slight pressure is maintained on the earring against the needle, the barbed end will not slip out of the needle. Since the earrings are inserted during the first visit, one can determine more readily whether the rings are placed as desired, and, if necessary, place them in a different location by repeating the procedure. Eight of the patients were given a supply of 5 per cent sulfathiazole in talc and told to powder the lobules two times a week for three weeks. I have had no cases of infection, but infection occurred when sutures were used in previous cases. The gold of the earrings practically always contains 16 to 24 per cent copper, which exerts an inhibiting influence on micro-organisms. While there was no active infection when no antibiotic was used, I believe healing is faster and there is less serous exudate when the weak antibiotic powder is used. The patients appreciate being able to wear the earrings immediately rather than an unsightly suture. The patient should be cautioned against removing the earrings for at least six weeks, at which time the tract should be firmly established.

H. W. Seiger, M.D., Santa Monica, Calif.

BLOOD LEVELS FOLLOWING PENICILLIN AND SULFADIAZINE THERAPY

To the Editor:—On page 220 of *The Journal*, Jan. 21, 1950, reference is made to blood levels following administration of penicillin and sulfadiazine. The answer states, "From as yet unpublished data, it has been determined that 8,000 units of procaine penicillin in oil with aluminum monostearate will give levels of 0.04 units of penicillin per cubic centimeter of serum at the end of 24 hours in infants and children weighing 10 to 40 pounds (4,536 to 18,144 Gm.)." This probably refers to work done recently in this department (Kagan, B. M.; Nierenberg, M.; Milzer, A., and Goldberg, D.: Studies of Penicillin in Pediatrics: III, *Pediatrics* 5:664-671, April 1950). This statement should be corrected to read that 8,000 units of procaine penicillin in oil with aluminum monostearate per pound of body weight will give levels of 0.04 units of penicillin per cubic centimeter of serum at the end of 24 hours in infants and children weighing 10 to 40 pounds.

Our studies also showed that when this same dosage per unit weight of procaine penicillin G in sesame oil or of procaine penicillin G in water with sodium carboxymethylcellulose was given to infants and children of this weight group, there was no statistically significant difference in the serum levels obtained at the end of 24 hours. With such preparations containing 300,000 units per milliliter, a practical schedule of dosage would be 0.25 ml. for a 10 pound infant, 0.5 ml. for a 20 pound, 0.75 ml. for a 30 pound and 1.0 ml. for a 40 pound child. It is suggested that this dosage be given every 12 hours for serious infections, particularly those due to relatively more resistant bacteria.

B. M. Kagan, M.D., Michael Reese Hospital, Chicago.

USE OF HOT PACKS IN POLIOMYELITIS

To the Editor:—On page 610 of the February 25 issue of *The Journal* was a question on the use of hot packs in poliomyelitis. At the Kingston Avenue Hospital for Contagious Diseases in Brooklyn, where patients with acute poliomyelitis are treated, hot packs, according to Sister Kenny's method, were used and discarded. We have been using a sympathicolytic drug (benzazoline hydrochloride [priscoline®]), which relieves the pain, irritability and fretfulness of many of the patients. The original use of hot packs was as a counterirritant in the relief of the pain. No one ever suggested that the pathologic process would be in any way influenced by the packs. However, we have found that better results have been obtained from the sympathicolytic drug and much less effort is required in the administration of this than in use of the hot packs.

Irving J. Sands, M.D., Brooklyn.

VULVOVAGINITIS

To the Editor:—In the February 25 issue of *The Journal* the question is asked as to what treatment is recommended for vulvovaginitis in a 7 year old girl who has failed to respond to concomitant use of estrogens and sulfathiazole in suspension. The inquirer should have been advised to search for oxyuriasis and also for foreign bodies in the vagina. Every discharge is not necessarily due to bacterial or fungus infections or to protozoan infection. It is best to emphasize the causes enumerated here, particularly the oxyuriasis. In pediatric practice one should look for pinworms as a cause of vulvovaginitis. Two different methods are available; namely, the cellophane anal swab and focusing a searchlight on the anus after it is spread apart for the observer to look for a worm. If this latter practice is followed each night for a month, one will not miss finding worms if they are present.

L. Charles Rosenberg, M.D., Newark, N. J.

E. S. Henderson

PRESIDENT, AMERICAN MEDICAL ASSOCIATION, 1950-1951

WALTER B. MARTIN
Norfolk, Va.

JAMES R. MILLER
Hartford, Conn.

EDWARD J. McCORMICK
Toledo, Ohio

EDWIN S. HAMILTON, Secretary
Kankakee, Ill.

LOUIS H. BAUER, Chairman
Hempstead, N. Y.

GUNNAR GUNDERSEN
La Crosse, Wis.

JOHN H. FITZGIBBON
Portland, Ore.

DWIGHT H. MURRAY
Napa, Calif.

F. J. L. BLASINGAME
Wharton, Texas

BOARD OF TRUSTEES

F. F. BORZELL
Philadelphia
Speaker—House of Delegates

JOSEPH S. BARR
Boston
Chairman
Section on Orthopedic Surgery

ARTHUR L. BLOOMFIELD
San Francisco
Chairman
Section on Internal Medicine

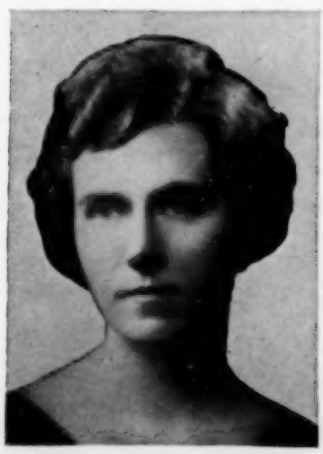
A. RAY IRVINE
Beverly Hills, Calif.
Chairman
Section on Ophthalmology

WILLIAM H. JOHNSTON
Santa Barbara, Calif.
Chairman
Section on Laryngology, Otology and Rhinology

F. W. KONZELMANN
Atlantic City, N. J.
Chairman
Section on Pathology and Physiology

U. V. PORTMANN
Cleveland
Chairman
Section on Radiology

MICHAEL E. DeBAKEY
Houston, Texas
Chairman
Section on Surgery, General and Abdominal



MARGARET MARY NICHOLSON
Washington, D. C.
Chairman
Section on Pediatrics

FREDERICK P. MOERSCH
Rochester, Minn.
Chairman
Section on Nervous and Mental Diseases

MILTON B. CASEBOLT
Kansas City, Mo.
Chairman
Section on General Practice

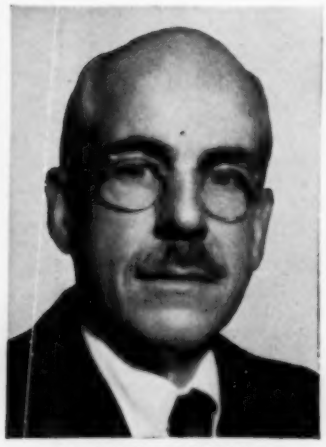
RUSSELL S. BOLES
Philadelphia
Chairman
Section on Gastro-Enterology and Proctology

CLINTON W. LANE
St. Louis
Chairman
Section on Dermatology and Syphilology

EDWARD N. COOK
Rochester, Minn.
Chairman
Section on Urology

CARL N. NEUPERT
Madison, Wis.
Chairman
Section on Preventive and Industrial Medicine and Public Health

WALTER E. VEST
Huntington, W. Va.
Chairman
Section on Diseases of the Chest



McKEEN CATTELL
New York
Chairman
Section on Experimental Medicine and Therapeutics

FRANK H. KRUSEN
Rochester, Minn.
Chairman
Section on Physical Medicine and Rehabilitation

FREDERIC W. CLEMENT
Toledo, Ohio
Chairman
Section on Anesthesiology

JAMES R. BLOSS
Huntington, W. Va.
Chairman
Section on Obstetrics and Gynecology

HOWARD A. RUSK
New York
Secretary
Section on Physical Medicine and Rehabilitation

FRANCIS M. FORSTER
Philadelphia
Secretary
Section on Nervous and Mental Diseases

JEAN S. FELTON
Oak Ridge, Tenn.
Secretary
Section on Preventive and Industrial Medicine and Public Health

JOHN S. LUNDY
Rochester, Minn.
Secretary
Section on Anesthesiology

PAUL C. HODGES
Chicago
Secretary
Section on Radiology

THOMAS E. ROBINSON
Salt Lake City
Secretary
Section on General Practice

JAY A. MYERS
Minneapolis
Secretary
Section on Diseases of the Chest

CHARLES N. PEASE
Chicago
Secretary
Section on Orthopedic Surgery

DONOVAN C. BROWNE
New Orleans
Secretary
Section on Gastro-Enterology and Proctology

I. RIDGEWAY TRIMBLE
Baltimore
Secretary
Section on Surgery, General and Abdominal

EARL E. EWERT
Boston
Secretary
Section on Urology

WALTER L. PALMER
Chicago
Secretary
Section on Internal Medicine

ARTHUR B. HUNT
Rochester, Minn.
Secretary
Section on Obstetrics and Gynecology

EDWIN F. HIRSCH
Chicago
Secretary
Section on Pathology and Physiology

CARL V. MOORE
St. Louis
Secretary
Section on Experimental Medicine and Therapeutics

TRYGVE GUNDERSEN
Boston
Secretary
Section on Ophthalmology

WYMAN C. C. COLE
Detroit
Secretary
Section on Pediatrics

JOHN H. LAMB
Oklahoma City
Secretary
Section on Dermatology and Syphilology

J. MILTON ROBB
Detroit
Secretary
Section on Laryngology, Otology and Rhinology